CB-6970

Networking Control Board

Model Number CB-6970

VIA® C7™/Eden™ Networking Control Board with Four 100/10 LAN

User's Manual

Version 1.1

User's Manual

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For more information on CB-6970 or other AEWIN products, please visit our website

http://www.aewin.com.tw.

For technical supports or free catalog, please send your inquiry to

info@aewin.com.tw

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Chapter 1. General Information

1.1 Introduction
The CB-6970 is a networking control board based on VIA architecture with CN700+VT8237R+ chipset supporting the C7^{TM}/Eden^{TM} CPU with 400MHz FSB.

The CB-6970 is equipped with four 10/100Mbps LAN ports, with two LAN ports bypass function.   It is designed for SMB/SOHO segment, suitable for Firewall, VPN, Load Balancing, IPS, IDS, etc.

1.2 Specification
- CPU: VIA C7^{TM}/Eden^{TM} low power processor
- BIOS: Award® 4Mb Flash BIOS
- Chipset: VIA CN700 + VT8237R+
- I/O Chipset: Winbond® 83627HG
- Memory: One 240pin DDR II DIMM socket can support up to 1GB
- Enhanced IDE: One 40-pin IDE connector
- Serial port: Two RS-232 serial ports
- KB/Mouse: Supports PS/2 keyboard and mouse
- USB: Support two USB2.0/1.1 ports
- Mini PCI Expansion: One Mini PCI socket
- Display: Support CRT
- Ethernet: Four Intel® 82551ER or Realtek® 8139CL+ 10/100Mbps
- Bypass: Support two Ethernet LAN ports bypass function
- Digital I/O: Four digital input and four digital output
- SSD interface: One 50-pin CompactFlash^{TM} TYPE II socket
- Watchdog timer: Can generate a system reset, support software selectable timeout interval
- System Monitoring: Built in W83627HG; support temperatures, fan speed, voltage monitoring function
- Power supply voltage: Single +12V (11.4V to 12.6V) power supply
- Max. Power Requirements: 80W
- Operating temperature: 32 to 140℉ （0 to 60℃）
- Board size: 8"(L) x 5.75"(W)   (203mm x 146mm)

1.3 Order Information
We offer various combination of CB-6970 control board according to CPU speed,

LAN chip, bypass function.   They can match various needs from the market.

Model	Description
CB-6970A-150	VIA C7™ 1.5GHz Processor/Four Intel® 82551ER LAN/Bypass function on two LAN ports
	Limitation: Without PXE function, with RAID function
CB-6970B-100	VIA C7™ 1.0GHz Processor/Four Intel® 82551ER LAN, w/o bypass function
	Limitation: Without PXE function, with RAID function
CB-6970C-040	VIA Eden™ (V4) 400MHz Processor/Four Realtek® 8139CL+ LAN, w/o bypass function
	Limitation: with PXE function, without RAID function (only SATA IDE)

1.4 Package

Please make sure that the following items have been included in the package before installation.

1. CB-6970 Control Board
2. Quick Installation Guide (Optional)
3. Cables (Optional)
4. CD-ROM that contains the following folders:
(1) Manual
(2) System Driver
(3) Ethernet Driver
(4) Utility Tools

If any item of above is missing or damaged, please contact your dealer or retailer from whom you purchased the CB-6970. Keep the box and carton when you probably ship or store CB-6970 in near future. After you unpack the goods, inspect and make sure the packaging is intact. Do not plug the power adapter to the main board of CB-6970 if you already find it appears damaged.
Note: Keep the CB-6970 in the original packaging until you start installation.

1.5 Precautions

Please make sure you properly ground yourself before handling the CB-6970 control board or other system components. Electrostatic discharge can be easily damage the CB-6970 control board.

Do not remove the anti-static packing until you are ready to install the CB-6970

control board.

Ground yourself before removing any system component from it protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

Handle the CB-6970 control board by its edges and avoid touching the components on it.

1.6 Board Layout
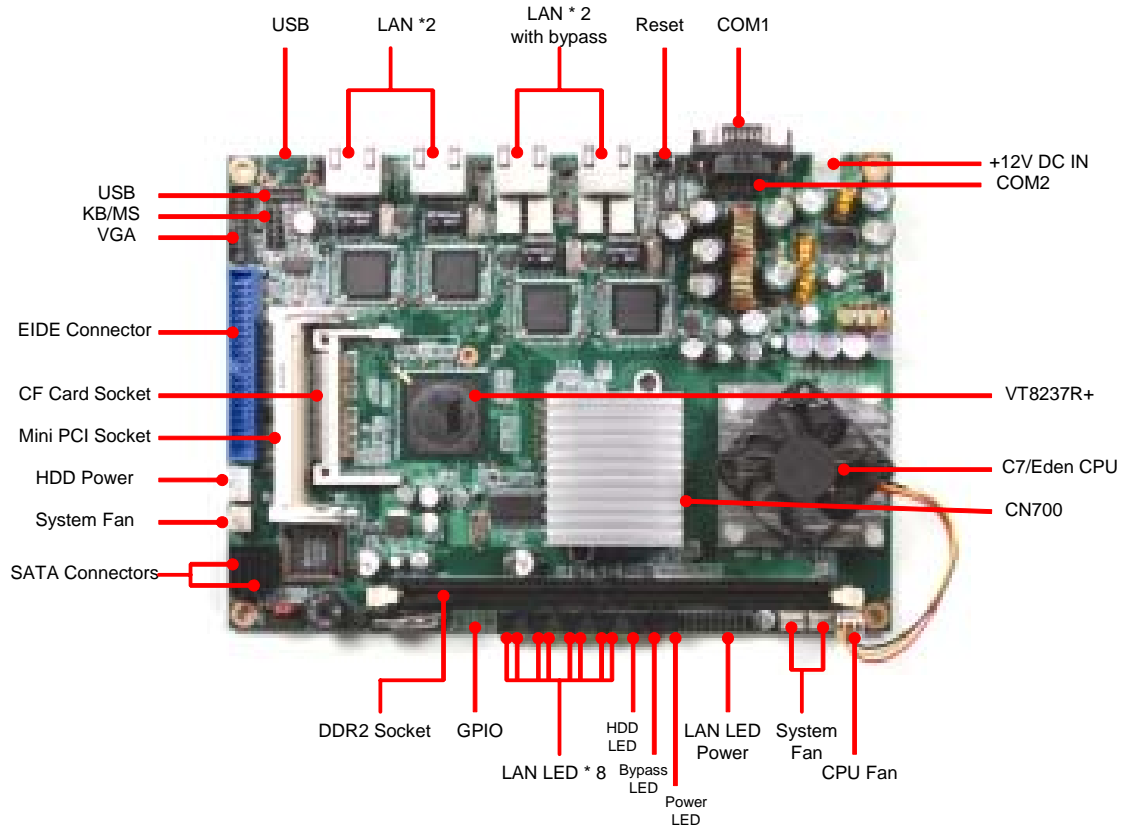
1.7 Board Dimension
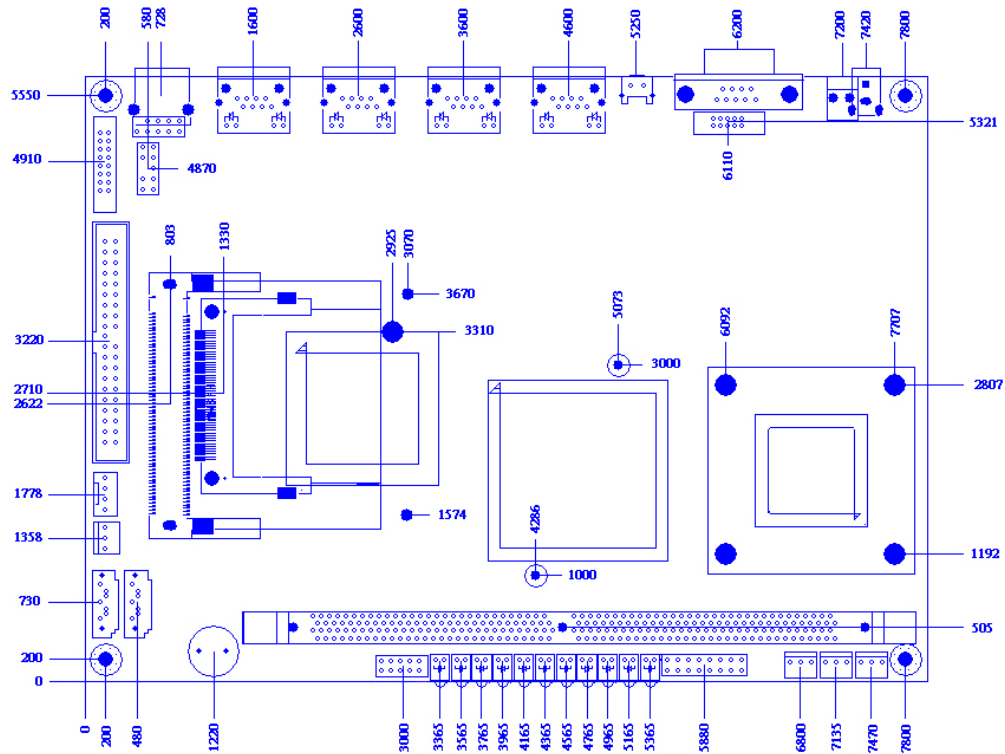
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Chapter 2. Connector/Jumper Configuration

2.1 Connector/Jumper Location and Definition
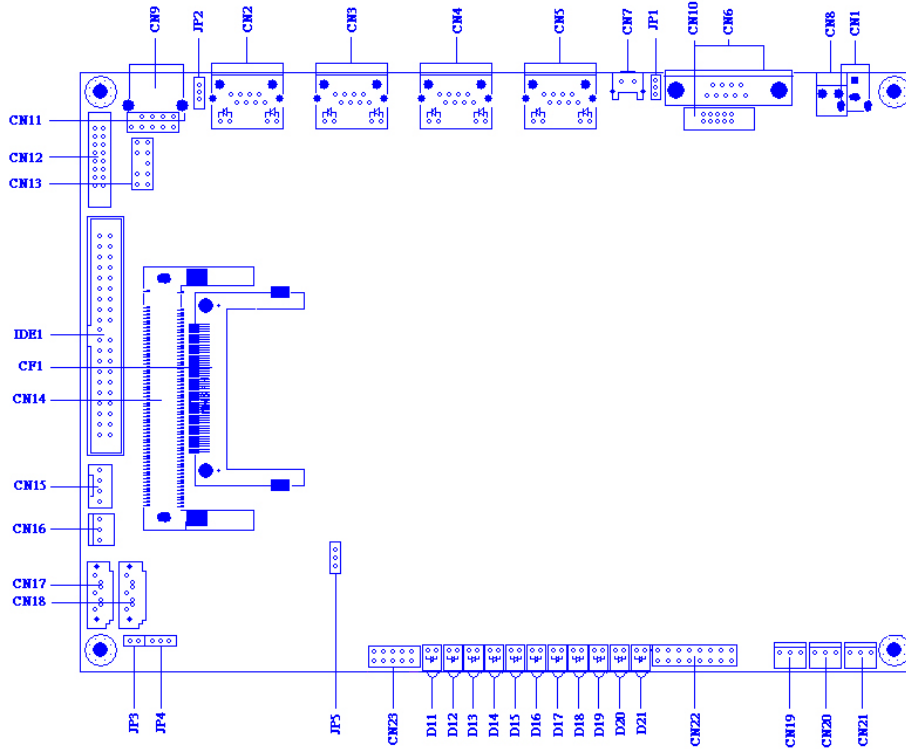
Connector	Description	Connector	Description
CN1	External Power Jack	CN14	MINIPCI
CN2	LAN1 RJ-45 Connector	CN15	IDE Power Connector
CN3	LAN2 RJ-45 Connector	CN16	Fan Connector
CN4	LAN3 RJ-45 Connector	CN17	SATA Connector
CN5	LAN4 RJ-45 Connector	CN18	SATA Connector
CN6	COM Port (D-Sub)	CN19/20/21	Fan Connector
CN7	Reset Button	CN22	LAN LED Header
CN8	Internal Power Jack	CN23	Manufacturer Default Using
CN9	USB Connector	JP1	BY PASS / WATCH DOG SELECT
CN10	COM Port Pin Header	JP2	BY PASS Mode Select
CN11	USB Pin Header	JP3	CF Master/Slave Select
CN12	VGA Pin-header (2mm)	JP4	Clear CMOS
CN13	KB/MS Pin-header	JP5	CPU FSB Select
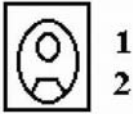
2.2 Onboard Processor
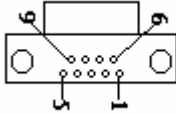
The CB-6970 can be VIA C7/ Eden nanobga2 packaging processors onboard.　The CPU is with 400MHz FSB and provides better performance.　We offer two options of VIA C7 1.5GHz or Eden 400MHz CPU.

2.3 Connector and Jumper Setting

CN1: External Power Jack

Pin	Define
1	+12V
2	Ground

CN2~CN5: LAN RJ-45 Connector

Pin	Define
1	TX+
2	TX-
3	RX+
4	Chassis Ground
5	Chassis Ground
6	RX-
7	Chassis Ground
8	Chassis Ground
D1 :Link/Activity LED	
Link	YELLOW
Activity	BLINKING
D2: Speed indicated LED	
10 Mbps	DIM
100 Mbps	GREEN
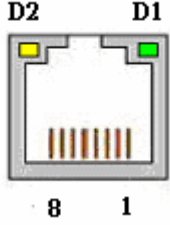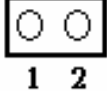
CN6: COM Port (D-Sub)

Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI

CN7: Reset Button

Pin	Define
1	Reset #
2	GND
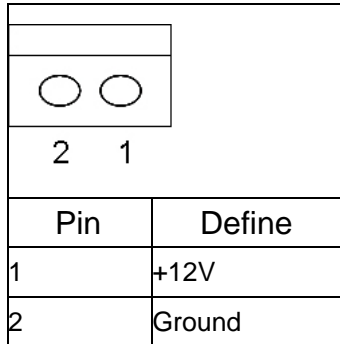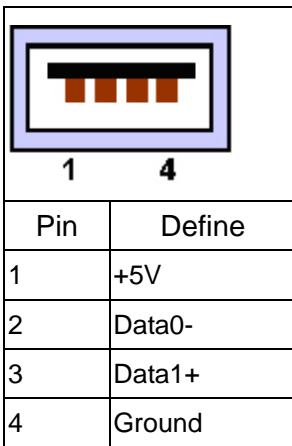
CN8: Internal Power Jack

Pin	Define
1	+12V
2	Ground

CN9: USB Connector

Pin	Define
1	+5V
2	Data0-
3	Data1+
4	Ground

CN10: COM Port Pin Header

Pin	Define	Pin	Define
1	DCD#	6	DSR#
2	RXD#	7	RTS#
3	TXD#	8	CTS#
4	DTR#	9	RI#2
5	Ground	10	NC

CN11: USB Pin Header

Pin	Define
1	USBVCC(+5V)
2	USBVCC(+5V)
3	USB2-
4	USB3-
5	USB2+
6	USB3+
7	GND
8	GND
9	KEY-Pin
10	GND

CN12: VGA Pin Header

Pin	Define	Pin	Define
1	RED	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DCC DATA
13	HSYNC	14	VSYNC
15	DCC CLOCK	16	NC

11   Ver 1.1. Aug, 2006
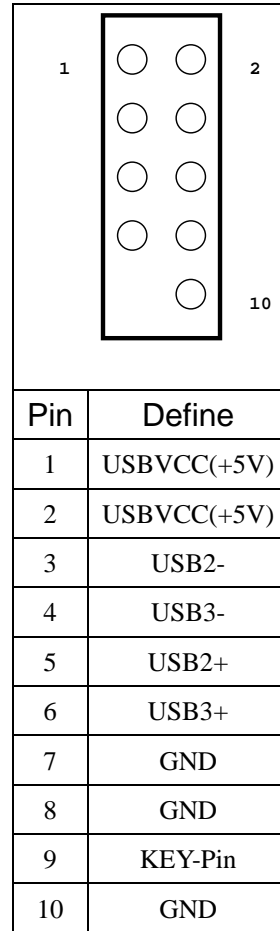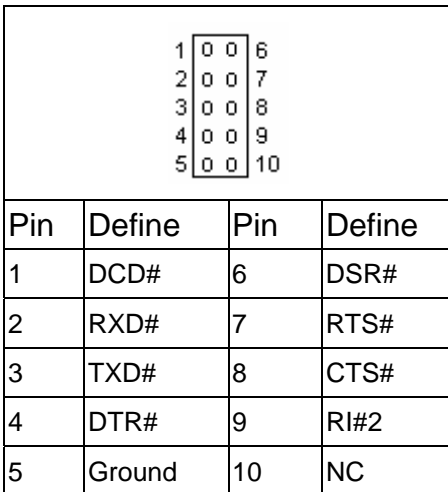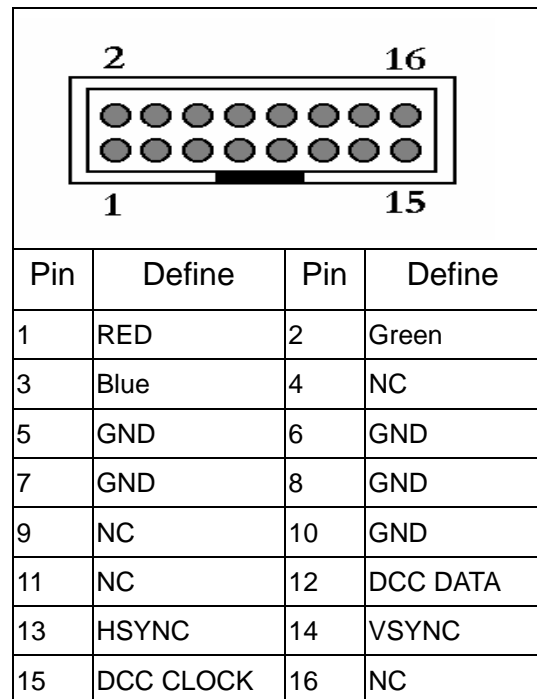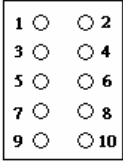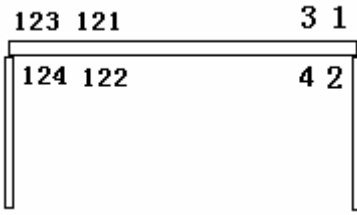
CN13: KB/MS Pin Header

Pin	Define	Pin	Define
1	KCLK	2	MCLK
3	KDAT	4	MDAT
5	NC	6	NC
7	PS2_GND	8	PS2_GND
9	PS2_VCC	10	PS2_VCC

CN14: Mini PCI
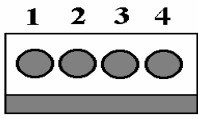
Pin	Define	Pin	Define
1	TIP	2	RING
3	8PMJ-33	4	8PMJ-13
5	8PMJ-63	6	8PMJ-23
7	8PMJ-73	8	8PMJ-43
9	8PMJ-83	10	8PMJ-53
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELN
15	CHSGND	16	RESERVED
17	INTA#	18	5V
19	3.3V	20	INTC#
21	REG#1	22	GNT#1
23	GND	24	3.3VAUX
25	CLK1	26	RST#
27	GND	28	3.3V
29	REG#0	30	GNT#0
31	3.3V	32	GND
33	AD{31}	34	PME#
35	AD{29}	36	CLK2
37	GND	38	AD{30}
39	AD{27}	40	3.3V
41	AD{25}	42	AD{28}
43	RESERVED	44	AD{26}
45	C/BE[3]#	46	AD{24}
47	AD{23}	48	IDSEL
49	GND	50	GND
51	AD{21}	52	AD{22}
53	AD{19}	54	AS{20}
55	GND	56	PAR
57	AD{17}	58	AD{18}
59	C/BE[2]#	60	AD[16]
61	IRDY#	62	GND
63	3.3V	64	FRAME#
65	CLKRUN#	66	TRDY#
67	SERP#	68	STOP#
69	GND	70	3.3V
71	PERP	72	DEVSEL#
73	CB/E[1]	74	GND
75	AD[14]	76	AD[15]
77	GND	78	AD[13]
79	AD[12]	80	AD[11]
81	AD[10]	82	GND
83	GND	84	AD[09]
85	AD[06]	86	C/BE[0]#
87	AD[07]	88	3.3V
89	3.3V	90	AD[06]
91	AD[05]	92	AD[04]
93	RESERVED	94	AD[02]
95	AD[03]	96	AD[00]
97	5V	98	RESERVED_WIP4
99	AD[01]	100	RESERVED_WIP4
101	GND	102	GND
103	AC_SYNC	104	M66EN
105	AC_SDATA_IN	106	AC_SDATA_OUT

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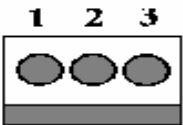
107	AC_BIT_CLK	108	AC_CODEC_ID0#
109	AC_CODEC_ID1#	110	AC_RESET#
111	MOD_AUDIO_MOD	112	RESERVED
113	AUDIO_GND	114	GND
115	SYS_AUDIO_OUT	116	SYS_AUDIO_IN
117	SYS_AUDIO_OUT G	118	SYS_AUDIO_IN G
119	AUDIO_GND	120	AUDIO_GND
121	RESERVED	122	MPCIACT#
123	VCC5VA	124	3.3VAUX

CN15: IDE Power Connector
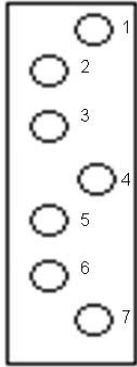
Pin	Define	Pin	Define
1	+12V	2	GND
3	GND	4	+5V

CN16, 19, 20, 21: Fan Connector
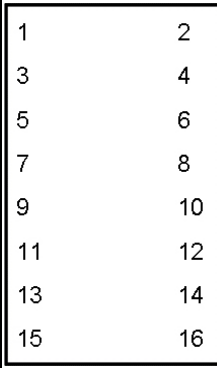
Pin	Define
1	Ground
2	+12V
3	Speed Detect

CN17, 18: SATA Connector

Pin	Define
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

CN22: LAN LED Header

Pin	Define	Pin	Define
1	PRO	2	SPEED0
3	ACTIVE0	4	LINK0
5	RP1	6	SPEED1
7	ACTIVE1	8	LINK1
9	RP2	10	SPEED2
11	ACTIVE2	12	LINK2
13	RP3	14	SPEED3
15	ACTIVE3	16	LINK3

CN23: Manufacturing Default Using Setting by manufacturer.

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JP1: Bypass/Watch Dog Select

Pin		Setting
	1-2	Bypass Mode (Default)
	2-3	Watchdog

JP2: Bypass Mode Select

Pin		Setting
	1-2	Bypass Always Enabled
	2-3	Normal (Default)

JP3: CF Master/Slave Select

Pin		Setting
	Close	Master
	Open	Slave

JP4: Clear CMOS

Pin		Setting
	1-2	Hold Data (Default)
	2-3	Clear CMOS

JP5: CPU FSB Select

Pin		Setting
	1-2	533MHz
	2-3	400MHz

2.4 CompactFlash^{TM} Socket Pin Assignment

CompactFlash^{TM} card is a small removable mass storage device.   It can provide complete PCMCIA-ATA functionality and compatibility plus True IDE functionality compatible with ATA/ATAPI-4.

CompactFlash^{TM} storage products are solid state form factor, it means they contain no moving parts.   Thus, it provides users with much greater protection of the data than conventional magnetic disk device.

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Ground	11	Ground	21	D00	31	D15	41	RESET
2	D03	12	Ground	22	D01	32	CS	42	ORDY
3	D04	13	VCC	23	D02	33	NC	43	DREG
4	D05	14	Ground	24	WP	34	IOR	44	DACK
5	D06	15	Ground	25	NC	35	IOW	45	LED
6	D07	16	Ground	26	NC	36	WE	46	BVD
7	CS	17	Ground	27	D11	37	RDY/BSY	47	D08
8	Ground	18	A02	28	D12	38	VCC	48	D09
9	Ground	19	A01	29	D13	39	SCSE	49	D10
10	Ground	20	A00	30	D14	40	NC	50	Ground
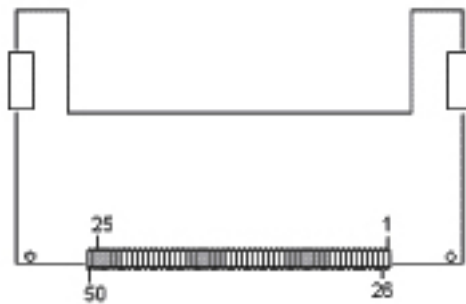
Chapter 3. BIOS Setup

The ROM chip of your CB-6970 board is configured with a customized Basic Input/Output System (BIOS) from Phoenix-Award BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required CMOS RAM stores information for:

- Date and time
- Memory capacity of the main board
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by battery installed on the CB-6970 board. By using the battery, all memory in CMOS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the CMOS data when you replace the battery of the battery power lose.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Load Optimized Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Standard COS Features" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.
3. In the main menu, press F10 ("Save & Exit Setup") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customize your system.   For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the Phoenix-Award Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system.   On-screen instructions explain how to use the program.

Enter the CMOS Setup program's main menu as follows:

1. Turn on or reboot the system.   After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program.   The main menu appears:

```
              Phoenix - AwardBIOS CMOS Setup Utility

    ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

    ▶ Advanced BIOS Features             Load Fail-Safe Defaults

    ▶ Advanced Chipset Features          Load Optimized Defaults

    ▶ Integrated Peripherals             Set Supervisor Password

    ▶ Power Management Setup             Set User Password

    ▶ PnP/PCI Configurations             Save & Exit Setup

    ▶ PC Health Status                  Exit Without Saving


    Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                   Time, Date, Hard Disk Type...
```

3. Choose a setup option with the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

In the main menu, press F10 ("Save & Exit Setup) to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program. Pressing <ESC> anywhere in the program returns you to the main menu.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following and the following sections of this chapter.

STANDARD CMOS FEATURES:

Configure the date & time, hard disk drive type, floppy disk drive type, primary display type and more

ADVANCED BIOS FEATURES:

Configure advanced system options such as enabling/disabling cache memory and shadow RAM

ADVANCED CHIPSET FEATURES:

Configure advanced chipset register options such DRAM timing

INTEGRATED PERIPHERALS:

Configure onboard I/O functions

POWER MANAGEMENT SETUP:

Configure power management features such as timer selects

PNP/PCI CONFIGURATION:

Configure Plug & Play IRQ assignments and PCI slots

PC HEALTH STATUS:

Configure the CPU speed and, if the optional system monitor IC is installed, view system information

FREQUENCY / VOLTAGE CONTROL:

Configure the CPU and PCI clock, if the optional system monitor IC is installed, view system information

LOAD FAIL-SAFE DEFAULT:

Loads BIOS default values.   Use this option as diagnostic aid if your system behaves erratically

LOAD OPTIMIZED DEFAULTS:

Loads optimized BIOS settings

SET SUPERVISORS & USER PASSWORD:

Configure the system so that a password is required when the system boots or you attempt to enter the CMOS setup program.   When you log in with this password, you will be able to enter the CMOS Setup main menu, but you can not enter other menus in the CMOS Setup program.

SAVE & EXIT SETUP:

Save changes of values to CMOS and exit the CMOS setup program

EXIT WITHOUT SAVING:

Abandon all CMOS changes and exit the CMOS setup program

3.4 Standard CMOS Features Setup

⇩ **Use the Standard CMOS Setup option as follows:**

1. Choose "Standard CMOS Features" from the main menu.   The following screen appears:
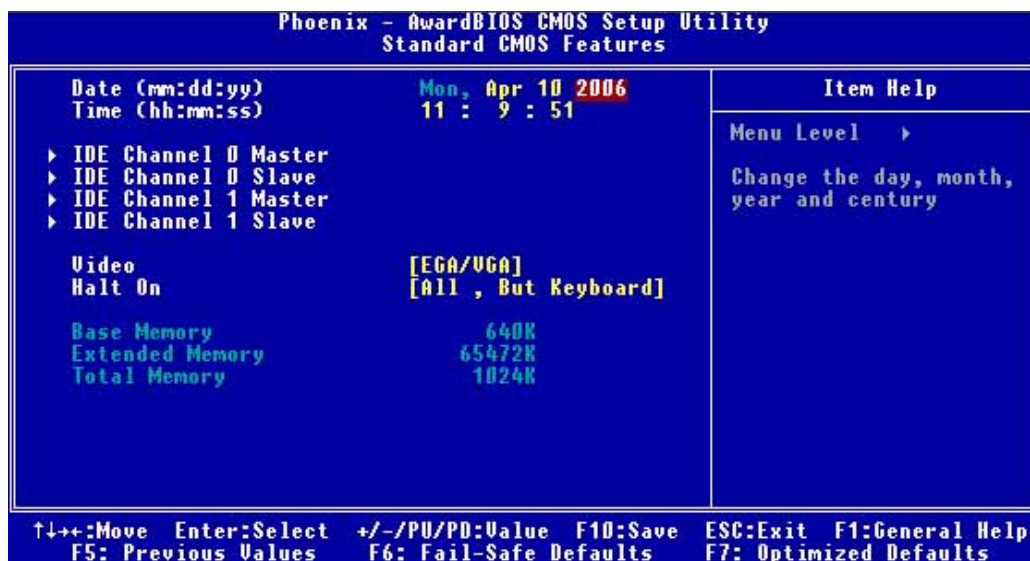
2. Use the arrow keys to move between fields.   Modify the selected field using the

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PgUP/PgDN/+/- keys.　Some fields let you enter numeric values directly.

Option	Description
Date (mm:dd:yy)	Type the current date
Time (hour:min:sec)	Type the current time (24-hour clock)
IDE channel	Select from "Auto", "User", or "None" If your drive is not one of the predefined types, choose "User" and enter the following drive specifications: Cylinders, heads, Wpcom, L-Zone, sectors, and mode Consult the documentation received with the drive for the values that will give you optimum performance.
Video	Select the default video device: EGA/VGA, CGA 40, CGA 80, Mono
Halt On	Select the situation what you want BIOS to stop power on self test process and notice you. Choose: <All Errors> <No Errors/ All> <But Keyboard (Default)> <All, But Diskette> <All, But Disk/Key>

3. After you have finished with the Standard CMOS Features program, press the <ESC> key to return to the main menu.

3.5 Advanced BIOS Features Setup

⇩ **Use the Advanced BIOS Features Setup option as follows:**

1. Choose "Advanced BIOS Features Setup" from the main menu.　The following screen appears:

```
Phoenix - AwardBIOS CMOS Setup Utility
            Advanced BIOS Features

 ▶ Hard Disk Boot Priority    [Press Enter]          Item Help
   Virus Warning              [Disabled]
   Quick Power On Self Test   [Enabled]      Menu Level   ▶
   First Boot Device          [Hard Disk]
   Second Boot Device         [Hard Disk]    Select Hard Disk Boot
   Third Boot Device          [LS120]        Device Priority
   Boot Other Device          [Enabled]
   Boot Up NumLock Status     [On]
   Gate A20 Option            [Fast]
   Typematic Rate Setting     [Disabled]
 x Typematic Rate (Chars/Sec) 6
 x Typematic Delay (Msec)     250
   Security Option            [Setup]
   MPS Version Control For OS [1.4]
   OS Select For DRAM > 64MB  [Non-OS2]
   Console Redirection        [Enabled]
   Baud Rate                  [19200]
   Agent Connect via          [NULL]
   Agent wait time(min)       [1]

↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
   F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

2. Use the arrow keys to move between items and to select values.　Modify the selected fields using the PgUP/PgDN keys.　Press the <F1> "Help" key for information on the available options:

Option	Description
Hard Disk Boot Priority	Set up the hard disk boot sequence.
Virus Warning	When enabled, anything attempts to access the boot sector and partition table, the BIOS will show a warning message on screen and alarm beep. The default setting is Disabled.
Quick Power On Self Test	Skip some checking items and speed up the power on process.
First/Second/Third Boot Device	The BIOS attempts to load the operating system from the devices in the sequence selected in these items.　Choose: HDD-0, LS-120, USB FDD…..
Boot Other Device	Set up other device to be bootable.
Boot Up NumLock Status	Select power on status of NumLock.
Gate A20 Option	Gate A20 is a device used to address memory above 1 MB. Fast (Default): Select chipset controller to control Gate 20. Normal: Select Keyboard controller to control Gate 20.
Typematic Rate Setting	The rate to click the keyboard is defined by keyboard controller.　When enabled, you can configure the Typematic Rate and Typematic

	Delay. The default is Disabled. X Typematic Rate: Set the rate keyboard can repeat per second, from 6~30 char/sec. X Typematic Delay: Set the delay time before keyboard can repeat, from 250~1000ms.
Security Option	Select whether the password is required for system boot or enter Setup menu. X System: the system will not boot and not access Setup menu if the password is wrong. X Setup: the system can boot, but not allow to access Setup menu if the password is wrong.
MPS Version Control For OS	Select 1.1, 1.4. Default is 1.4.
OS Select for DRAM > 64MB	Select OS/2 if your system is using OS/2 and has a memory size of more than 64MB. Default is Non-OS2.
Console Redirection	Choose <enabled> allowing connecting the server of hyper terminal to monitor client side. It has to be worked under DOS mode, and the client terminal doesn't need graphic function.
Baud Rate	The data transfer rate (bit per second) to agent. Choose 9600/19200/38400/57600/115200 item.
Agent Connect via	Select <Null> to let agent connect directly.
Agent wait time (min)	Agent negotiate time, choose 1/2/4/8 min.
Agent after boot	Choose <enabled> for agent to administrate the system after boot.
Video BIOS Shadow	Choose <Enabled> to change the Video BIOS location from ROM to RAM. Video shadow will enhance the Video speed.
Full Screen Logo Show	Allow to display the full screen logo when boot up.

3.6 Advanced Chipset Features Setup

⇩ **Use the Advanced Chipset Features Setup option as follows:**

1. Choose "Advanced Chipset Features Setup" from the main menu. The following screen appears;
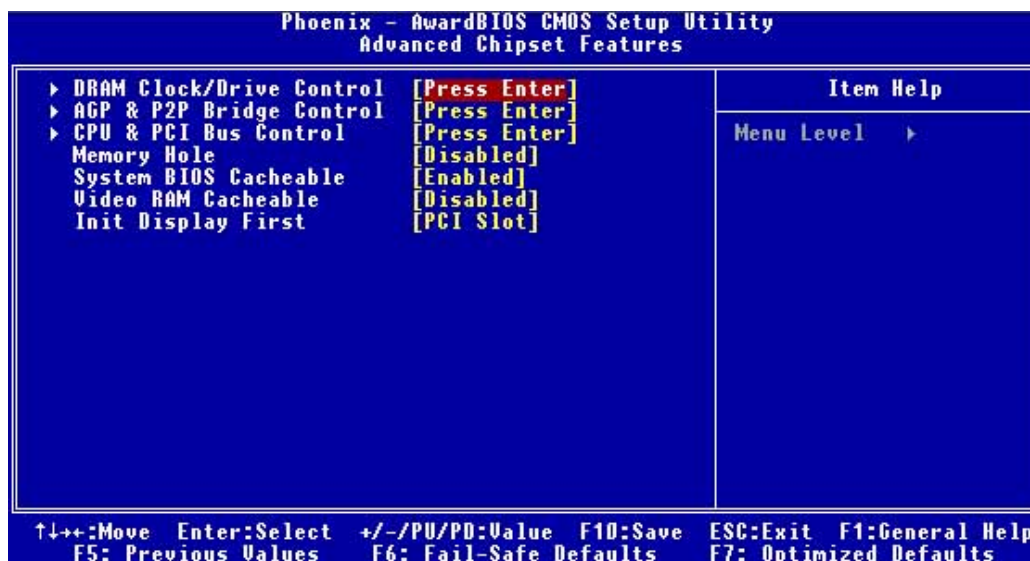
```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features

   ▶ DRAM Clock/Drive Control    [Press Enter]          Item Help
   ▶ AGP & P2P Bridge Control    [Press Enter]
   ▶ CPU & PCI Bus Control       [Press Enter]     Menu Level   ▶
     Memory Hole                 [Disabled]
     System BIOS Cacheable       [Enabled]
     Video RAM Cacheable         [Disabled]
     Init Display First          [PCI Slot]


 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN Keys.   For information on the various options, press

   <F1> key .

Option	Description
DRAM Clock/Device Control	Select <By SPD> or <Auto By SPD> to follow PC SDRAM Serial Presence Detect Specification. DRAM Clock <By SPD> DRAM Timing < Auto By SPD>
AGP & P2P Bridge Control	Allow to allocate the system resource to AGP for video use.
CPU & PCI Bus Control	Allow to setup the ability for CPU and PCI bus.
Memory Hole	Select Enabled or Disabled. You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it can not be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirement.
System BIOS Cacheable	Select Enabled or Disabled. When enabled, caching of the system BIOS at F0000h-FFFFFh, enhancing system performance. However, if any program writes to this memory area, a system error may result.
Video RAM Cacheable	Select Enabled or Disabled. When Enable this

	option to allow caching of the Video BIOS.
Init Display First	Allow to choose the priority of PCI VGA card or onboard. Default is <PCI slot>.

3.7 Integrated Peripherals

⇩ **Use the Integrated Peripherals Setup option as follows:**

1. Choose "Integrated Peripherals Setup" from the main menu. The following screen appears:

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Please press the <F1> key for information on the various options.

Option	Description
Onboard Device	
VIA OnChip IDE Device	Select and set up the SATA, IDE devices
VIA OnChip PCI Device	Select and set up the PCI devices
Super I/O Device	Select and set up the super I/O devices
BIOS Write Protect	<Enabled> not allow to write data into BIOS. The default is <Disabled>.

Super IO Device

Onboard Serial Port 1	3F8/IRQ4、2F8/IRQ3、3E8/IRQ4、2E8/IRQ3、AUTO

Onboard Serial Port 2	3F8/IRQ4、2F8/IRQ3、3E8/IRQ4、2E8/IRQ3、AUTO

3.8 Power Management Setup

The Power Management Setup controls the board's "green" features. To save energy these features shut down the video display and hard disk drive.

⇩ **Use the Power Management Setup option as follows:**

1. Choose "Power Management Setup" from the main menu. The following screen appears.

2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

Option	Description
Power Management Option	This field allows you to select the type (or degree) of power saving by changing the length of idle time that elapses before the "Suspend Mode" and "HDD Power Down" field is activated. Min Saving Minimum power saving time for the " Suspend Mode" and "HDD Power Down" =15min. Max Saving Maximum power saving time for the "Suspend Mode" and "HDD Power Down"=1 min.

	User Define Allows you to set the power saving time in the "Suspend Mode" and "HDD Power Down" field.
HDD Power Down	This is selectable only when the power management filed is set to user define. When the system enters the HDD power down mode according to the power saving time selected, the hard disk drive will be powered down while all other devices remain active.
Suspend Mode	When the system enters the Suspend mode, the CPU and onboard peripherals will be shut off.
Video Off Option	Select power saving modes when the monitor is blank. Default is <Suspend - > Off>.
Video Off Method	This determines the manner in which the monitor is blanked.　V/H SYNC + Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Ac Loss Auto Restart	The field defines how the system will act after an AC power loss during system. Select <Off> will keep the system in off status until press the power button. Select <On> will automatically power on when AC power is back.
IRQ/Event Activities Detect	Allow to set IRQs that will reestablish the system from a power saving sleep mode.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the main menu.

3.9 PNP/PCI Configuration

This option is used to configure Plug and Play assignments and route PCI interrupts to designated ISA interrupts.

⇩ **Use the PNP/PCI Configuration Setup option as follows:**

1. Choose "PNP/PCI Configuration Setup" from the main menu, the following screen appears.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    PnP/PCI Configurations

 PNP OS Installed          [No]            │    Item Help
 Reset Configuration Data  [Disabled]      │
                                           │ Menu Level  ▶
 Resources Controlled By   [Auto(ESCD)]    │
 x IRQ Resources           Press Enter     │ Select Yes if you are
                                           │ using a Plug and Play
 PCI/VGA Palette Snoop      [Disabled]      │ capable operating
 Assign IRQ For VGA         [Enabled]       │ system Select No if
 Assign IRQ For USB         [Enabled]       │ you need the BIOS to
                                           │ configure non-boot
                                           │ devices



 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```
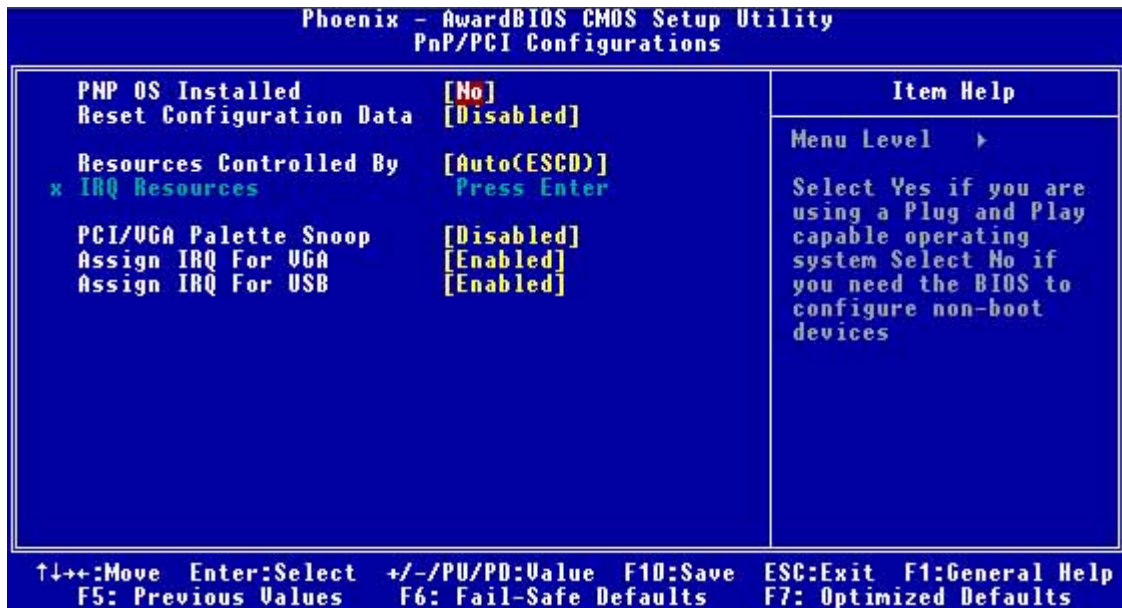
2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

Option	Description
PNP OS installed	NO: BIOS program will adjust all the set up by itself YES: When you install the system that support plug & play, press <YES>
Reset Configuration Data	Enabled The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configure data Disabled The BIOS will not reset the configuration data
Resources Controlled By	Resources controlled by the Award plug and play BIOS has the capability to automatically configure all of the boot and plug and play compatible devices. Auto (ESCD) The system will automatically detect the settings for you. Manual choose the specific IRQ in the " IRQ Resources" field.
PCI/VGA Palette Snoop	This field determines whether the MPEG ISA/VESA VGA cards a work with PCI/VGA or not Enable MEPG ISA/VESA VGA cards work with PCI/VGA Disabled MPEG ISA/VESA VGA card does not work with PCI/VGA
Assign IRQ for VGA	Select Enabled/Disabled to specify whether the VGA

	uses on IRQ or not.
Assign IRQ for USB	Select Enabled/Disabled to specify whether the USB uses on IRQ or not.

3. Please press the <ESC> key to return the main menu after finishing with the PNP/PCI Configuration Setup.

3.10 PC Health Status Configuration Setup

Choose "PC Health Status Configuration Setup" from the main menu, the following screen appears:
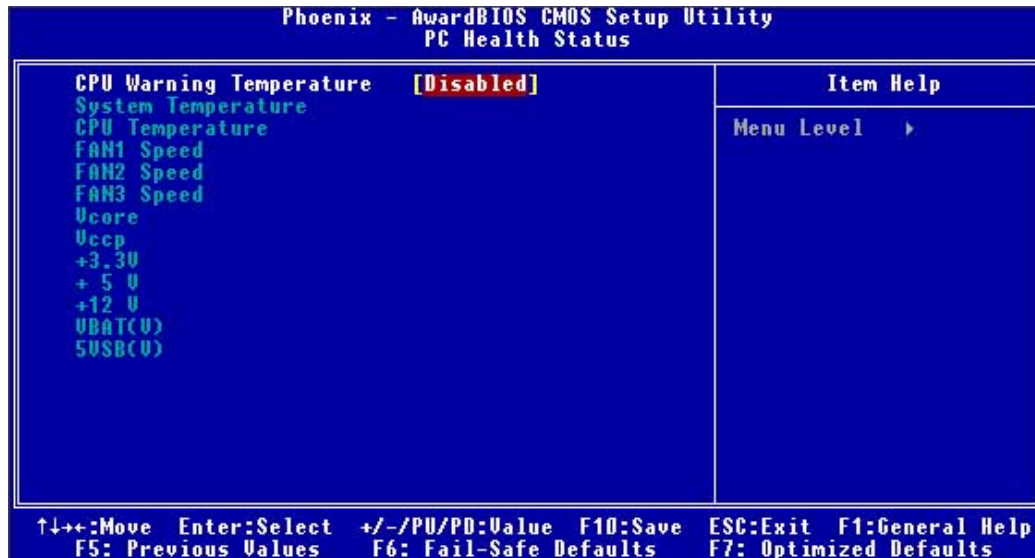
Option	Description
CPU Warning Temperature	An alarm will beep when the CPU temperature is higher than the maximum limit. The default is <Disabled> and alarm will not beep.

3.11 Frequency/Voltage Control

The item enabled you to set up the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in the system.

Option	Description
Spread Spectrum	If you enable the item, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.
CPU Clock	Allow to adjust the CPU Clock.

3.12 Load Fail-Safe Defaults

This option loads the troubleshooting default values permanently stored in the BIOS ROM. This is useful if you are having problems with the main board and need to debug or troubleshoot the system. The loaded default settings do not affect the Standard CMOS Setup screen.
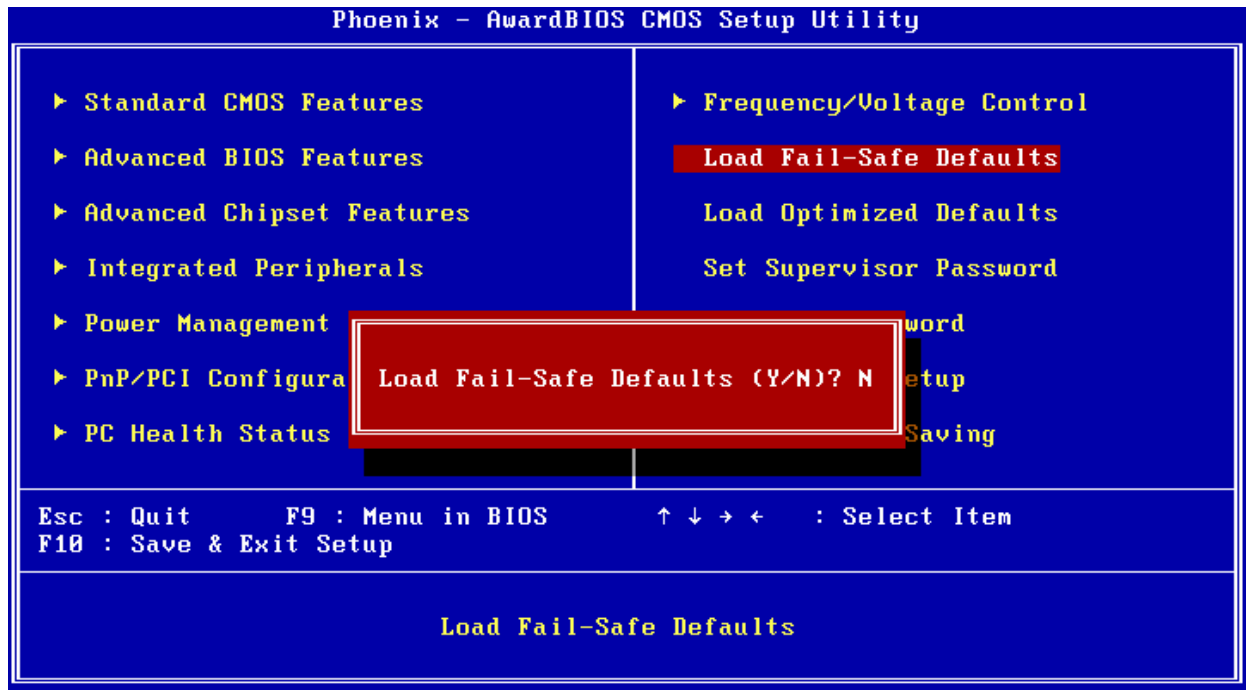
```
            Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────┬───────────────────────────────┐
│  ▶ Standard CMOS Features        │  ▶ Frequency/Voltage Control   │
│                                  │                               │
│  ▶ Advanced BIOS Features        │    Load Fail-Safe Defaults    │
│                                  │                               │
│  ▶ Advanced Chipset Features     │    Load Optimized Defaults    │
│                                  │                               │
│  ▶ Integrated Peripherals        │    Set Supervisor Password    │
│                                  │                               │
│  ▶ Power Management      ┌─────────────────────────────┐ word   │
│                          │                             │        │
│  ▶ PnP/PCI Configura     │ Load Fail-Safe Defaults (Y/N)? N │ etup │
│                          │                             │        │
│  ▶ PC Health Status      └─────────────────────────────┘ aving  │
│                                                                  │
├──────────────────────────────────────────────────────────────────┤
│  Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item │
│  F10 : Save & Exit Setup                                          │
├──────────────────────────────────────────────────────────────────┤
│                                                                  │
│                   Load Fail-Safe Defaults                        │
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```

To use this feature, highlight it on the main screen and press <Enter>.   A line will appear on the screen asking if you want to load the BIOS default values.   Pres the <Y> key and then press <Enter> if you want to load the BIOS default.

3.13 Load Optimized Defaults

This option loads optimized settings stored in the BIOS ROM.   The auto-configured settings do not affect the Standard CMOS Setup screen.

```
             Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

  ▶ Advanced BIOS Features             Load Fail-Safe Defaults

  ▶ Advanced Chipset Features          Load Optimized Defaults

  ▶ Integrated Peripherals             Set Supervisor Password

  ▶ Power Management        ┌──────────────────────────┐word

  ▶ PnP/PCI Configura       │ Load Optimized Defaults (Y/N)? N │etup

  ▶ PC Health Status        └──────────────────────────┘aving


  Esc : Quit         F9 : Menu in BIOS       ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                      Load Optimized Defaults
```
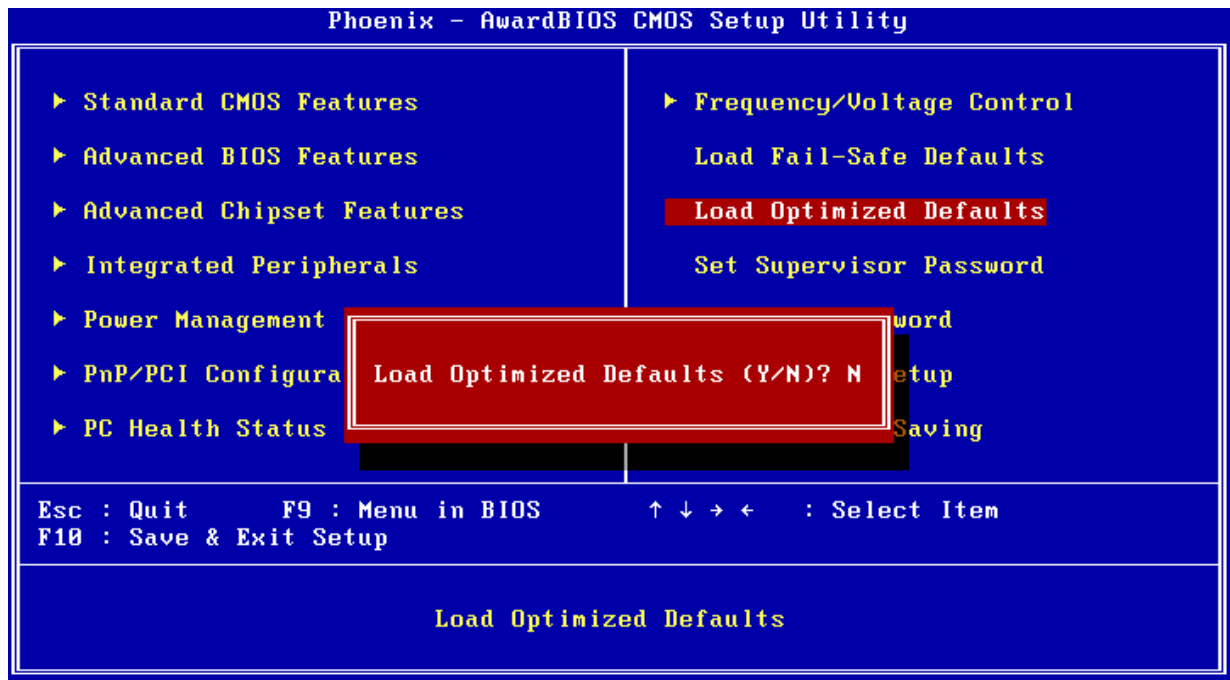
To use this feature, highlight it on the main screen and press <Enter>.   A line will appear on the screen asking if you want to load the Optimized Default Values. Press the <Y> key and then press <Enter> if you want to load the SETUP default.
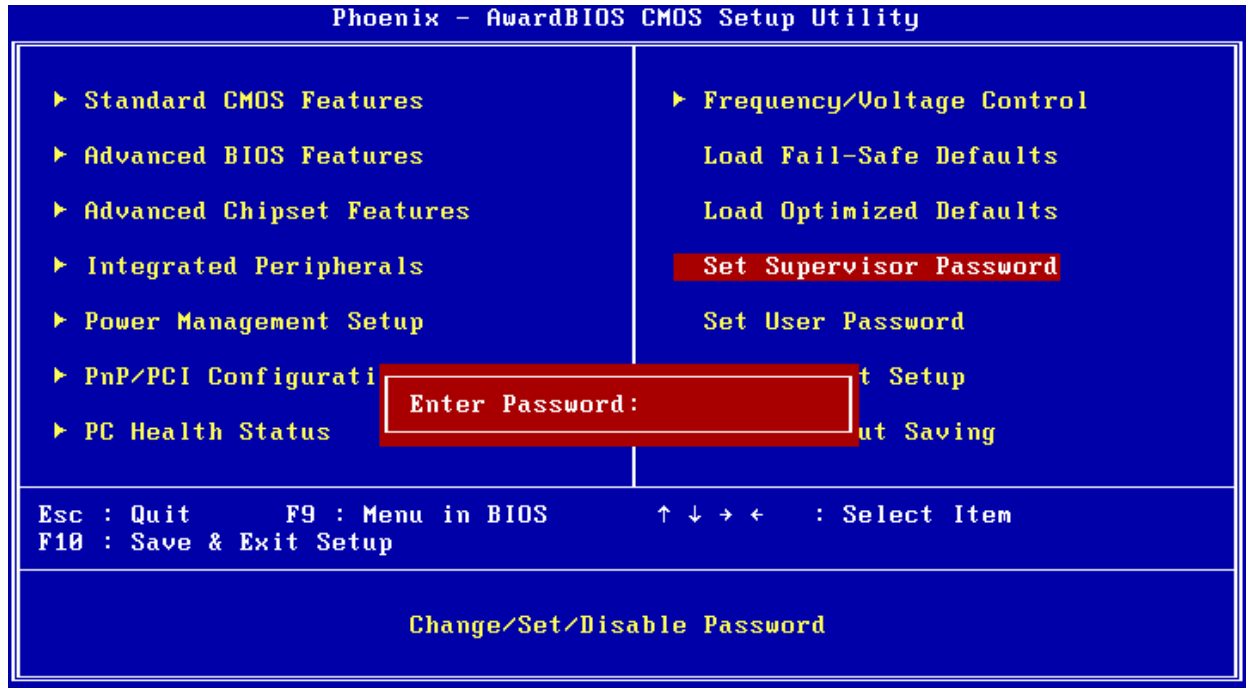

3.14 Supervisor/User Password

The password options let you prevent unauthorized system boot-up or unauthorized use of CMOS setup.   The Supervisor Password allows both system and CMOS Setup program access; the User Password allows access to the system and the CMOS Setup Utility main menu.

The password functions are disabled by default.   You can use these options to enable a password function or, if a password function is already enabled, change the password.

To change a password, first choose a password option from the main menu and enter the current password.   Then type your new password at the prompt.   The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after entering the password.   At the Next Prompt, confirm the new password by typing it and pressing <Enter> again.

```
            Phoenix - AwardBIOS CMOS Setup Utility
  ┌──────────────────────────────────────────────────────────────┐
  │  ▶ Standard CMOS Features      │  ▶ Frequency/Voltage Control  │
  │                                │                               │
  │  ▶ Advanced BIOS Features      │     Load Fail-Safe Defaults   │
  │                                │                               │
  │  ▶ Advanced Chipset Features   │     Load Optimized Defaults   │
  │                                │                               │
  │  ▶ Integrated Peripherals      │     Set Supervisor Password   │
  │                                │                               │
  │  ▶ Power Management Setup       │     Set User Password         │
  │                                │                               │
  │  ▶ PnP/PCI Configurati ┌──────────────────────┐  t Setup      │
  │                        │ Enter Password:       │               │
  │  ▶ PC Health Status    └──────────────────────┘  ut Saving     │
  ├──────────────────────────────────────────────────────────────┤
  │  Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item │
  │  F10 : Save & Exit Setup                                        │
  ├──────────────────────────────────────────────────────────────┤
  │              Change/Set/Disable Password                       │
  └──────────────────────────────────────────────────────────────┘
```
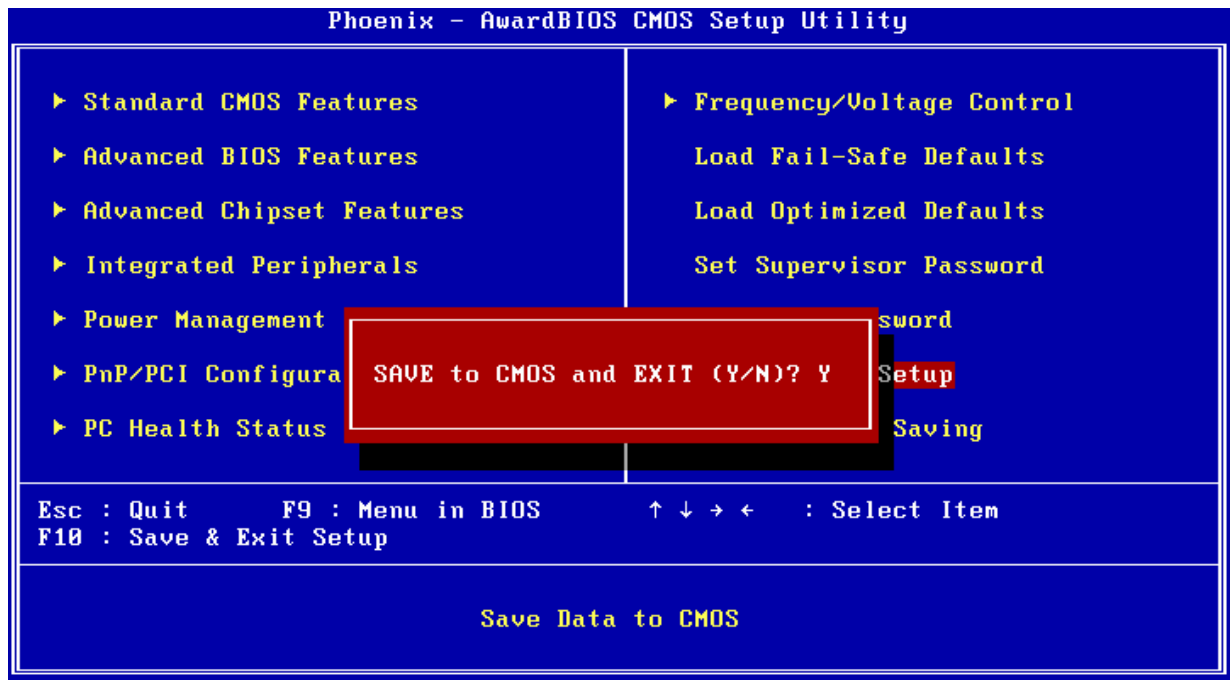
After you use this option to enable a password function, use the "Security Option" in "BIOS Feature Setup" to specify whether a password is required every time the system boots or only when an attempt is made to enter the CMOS Setup program.

3.15 Save and Exit Setup
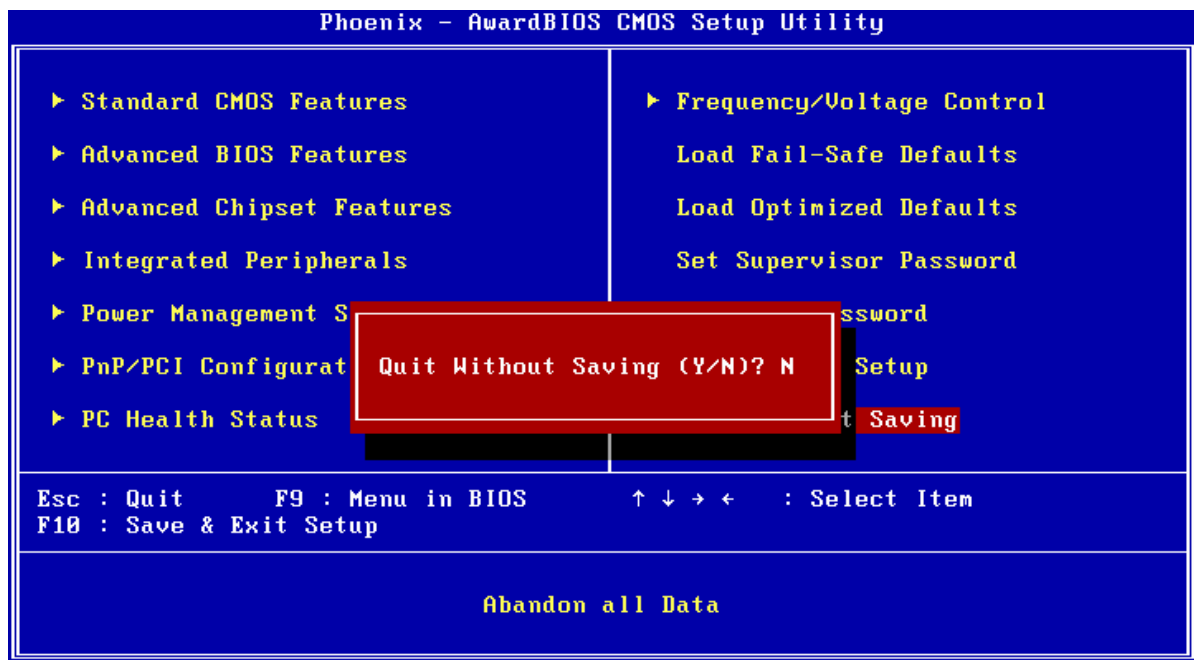This function automatically saves all CMOS values before exiting Setup.

```
             Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────────┐
│ ▶ Standard CMOS Features          ▶ Frequency/Voltage Control     │
│                                                                   │
│ ▶ Advanced BIOS Features             Load Fail-Safe Defaults      │
│                                                                   │
│ ▶ Advanced Chipset Features          Load Optimized Defaults      │
│                                                                   │
│ ▶ Integrated Peripherals             Set Supervisor Password      │
│                                                                   │
│ ▶ Power Management  ┌──────────────────────────────┐ sword        │
│                     │                              │               │
│ ▶ PnP/PCI Configura │  SAVE to CMOS and EXIT (Y/N)? Y │ Setup     │
│                     │                              │               │
│ ▶ PC Health Status  └──────────────────────────────┘ Saving       │
│                                                                   │
├─────────────────────────────────────────────────────────────────┤
│ Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item   │
│ F10 : Save & Exit Setup                                           │
├─────────────────────────────────────────────────────────────────┤
│                     Save Data to CMOS                             │
└─────────────────────────────────────────────────────────────────┘
```

3.16 Exit Without Saving

Use this function to exit Setup without saving the CMOS value.

```
             Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────────┐
│ ▶ Standard CMOS Features          ▶ Frequency/Voltage Control     │
│                                                                   │
│ ▶ Advanced BIOS Features             Load Fail-Safe Defaults      │
│                                                                   │
│ ▶ Advanced Chipset Features          Load Optimized Defaults      │
│                                                                   │
│ ▶ Integrated Peripherals             Set Supervisor Password      │
│                                                                   │
│ ▶ Power Management S ┌──────────────────────────────┐ ssword      │
│                      │                              │              │
│ ▶ PnP/PCI Configurat │ Quit Without Saving (Y/N)? N │ Setup       │
│                      │                              │              │
│ ▶ PC Health Status   └──────────────────────────────┘ t Saving    │
│                                                                   │
├─────────────────────────────────────────────────────────────────┤
│ Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item   │
│ F10 : Save & Exit Setup                                           │
├─────────────────────────────────────────────────────────────────┤
│                     Abandon all Data                              │
└─────────────────────────────────────────────────────────────────┘
```

Chapter 4. Utility & Driver Installation

4.1 Operation System Supporting

CB-6970 can support Windows® and Linux® operation system as follows.   Before installation, please check your OS version.   If your OS is not in the following list, please upgrade your OS version.

| OS	Version
Windows®	Windows® 2000 SP4/Windows® XP SP2
Linux®	Fedora Core 2/Linux® 2.6 or above

4.2 System Driver Installation

CB-6970 offers the system driver in the setup CD.   Please install the driver follow the below procedures.

1. Insert the setup CD of CB-6970 into your CD-ROM drive.
2. Choose the Drivers/system file to click the Setup icon.
3. Click [Next] button.
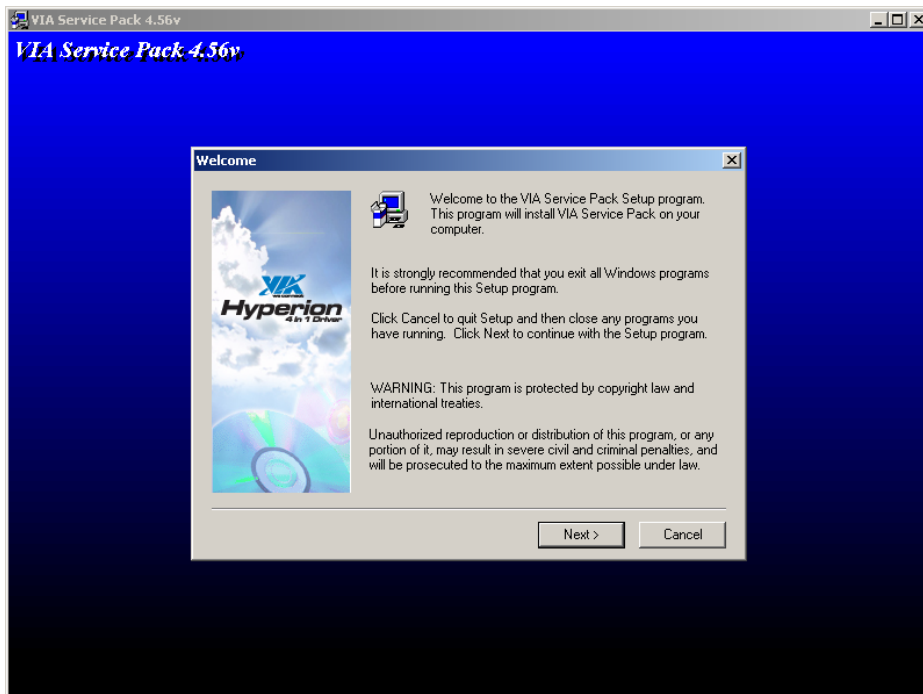
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4 Click [YES] button.
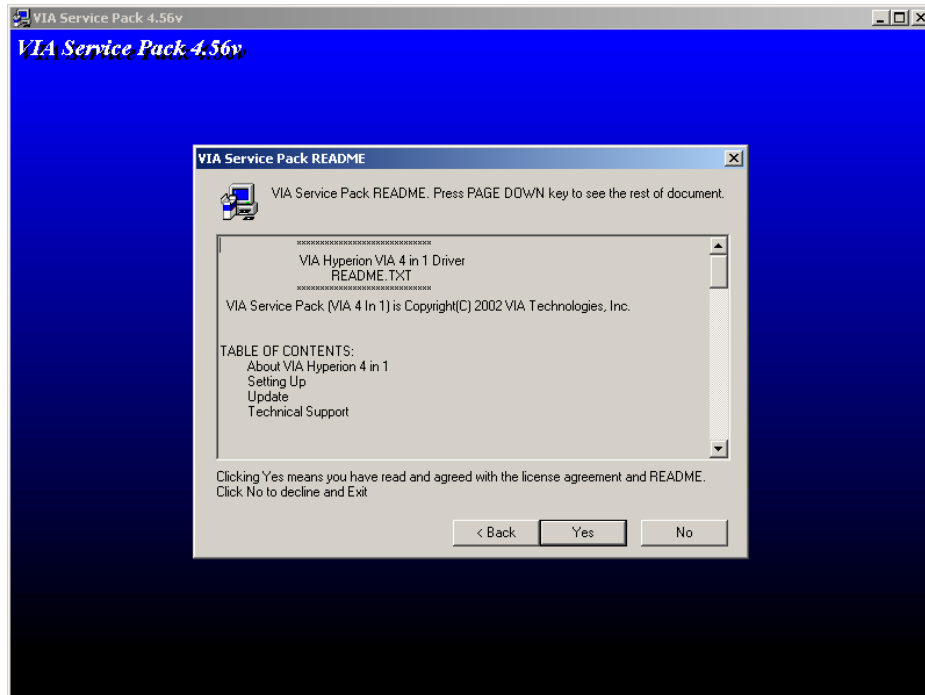
5. Choose <Normal Installation> to install all drivers.   Click [Next] button.
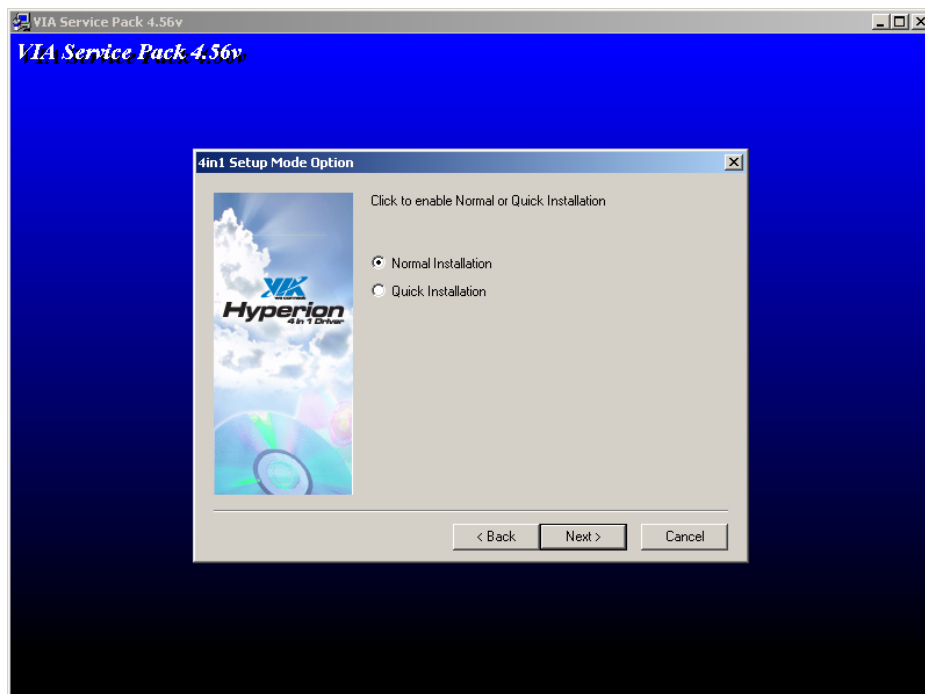
6. Choose all setting.   Click [Next] button.
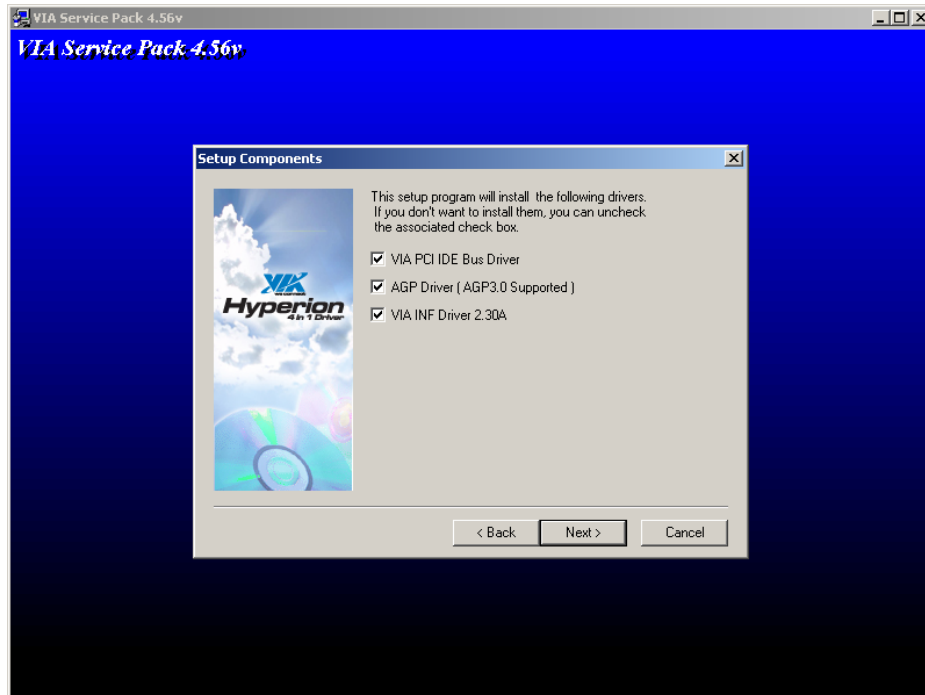
7. Choose <Install VIA PCI IDE Bus Driver>.   Click [Next] button.
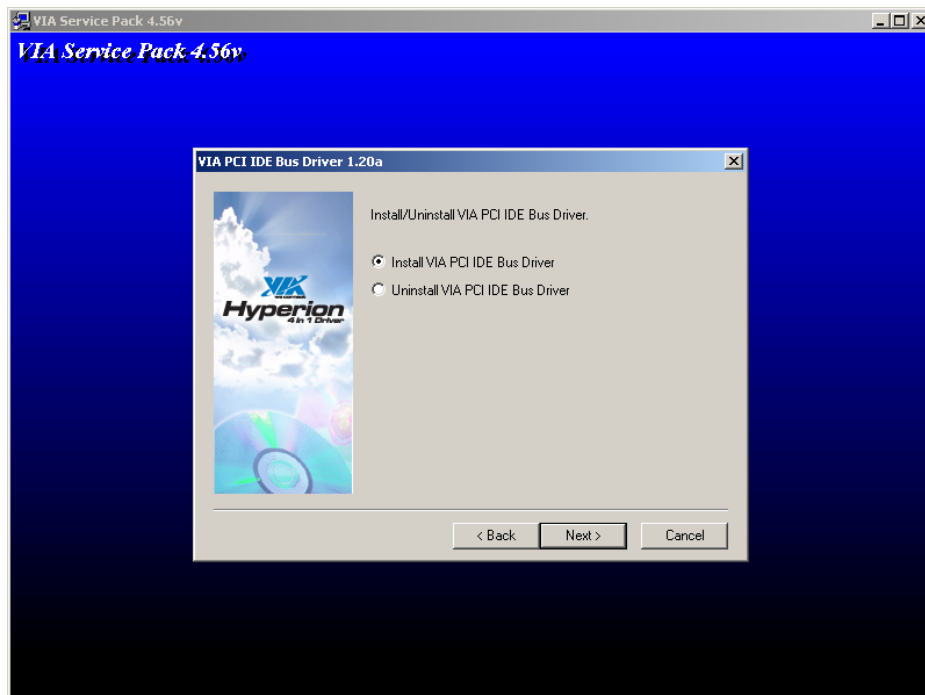
8. Choose <Install AGP driver>.   Click [Next] button.
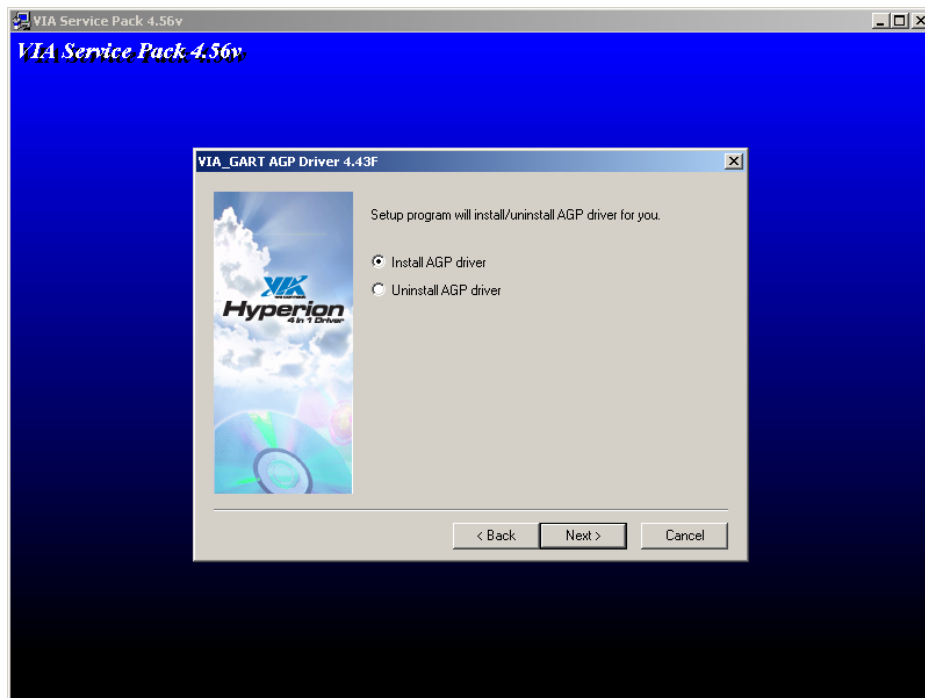
9. Click [OK] button to finish the installation.
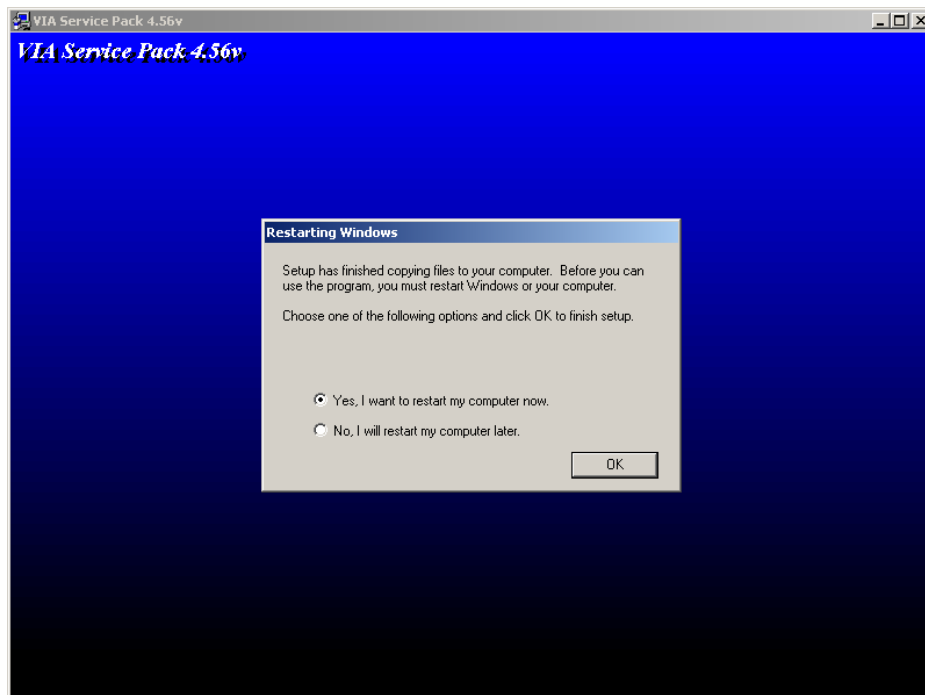
4.3 LAN Driver Installation

CB-6970 support Ethernet controlled by using Intel 82551ER® or Realtek® 8139CL+ chipset.   Please install the driver follow the below procedures.

1. Insert the setup CD of CB-6970 into your CD-ROM drive.
3. Click the [Start] button.
4. Choose the [Setting] item.
5. Click the [Control Panel] item.
6. Select the [Systems] item to open the [System Properties] box.
7. Click the [Device Manager] tab.
8. Choose the [Network adapters] item.
9. Click the [Driver] tab.
10. Click the [Update Driver] button. Then the Update Device Driver Wizard will appears.
11. Click [Next] button.
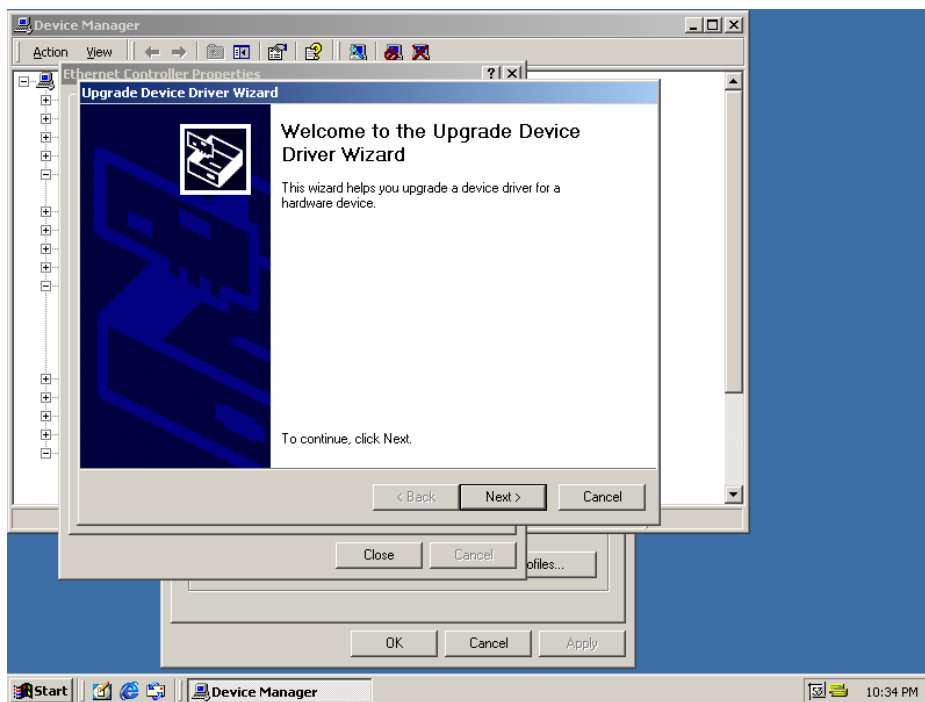
12. Click [Next] button.
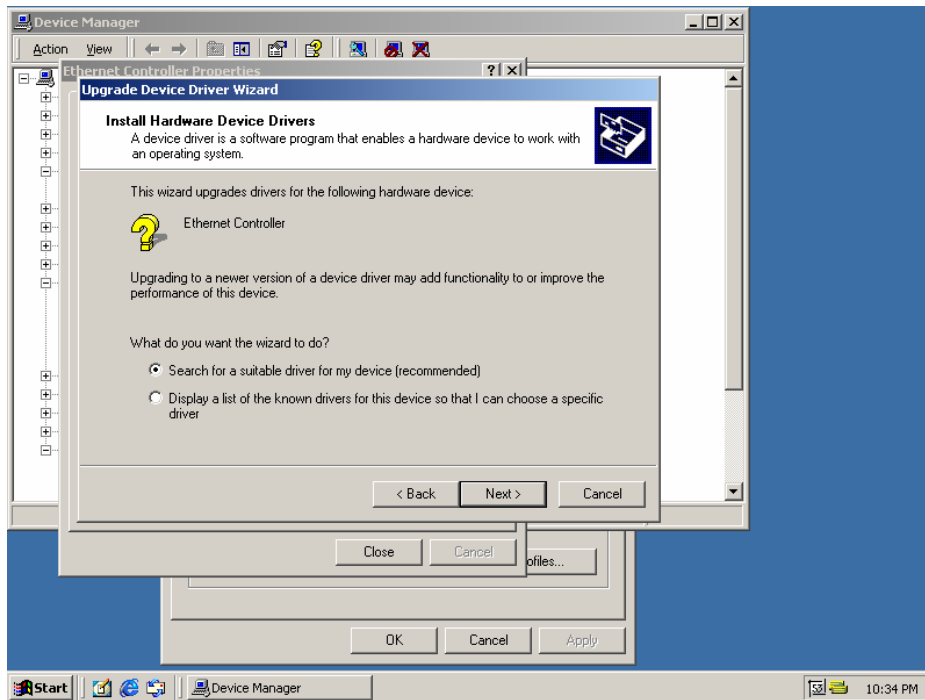
13. Choose <Specify a location>, press [Next] button.
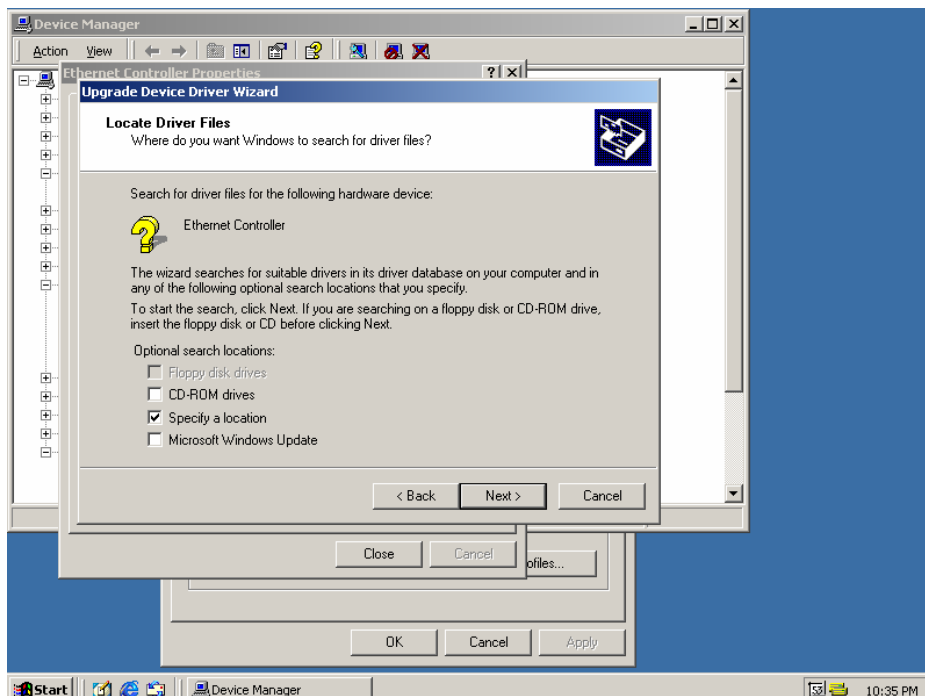
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14. Find the Intel® 82551 or Reatek® 8139CL+ driver in the Setup CD.

15. Press the [OK] button.
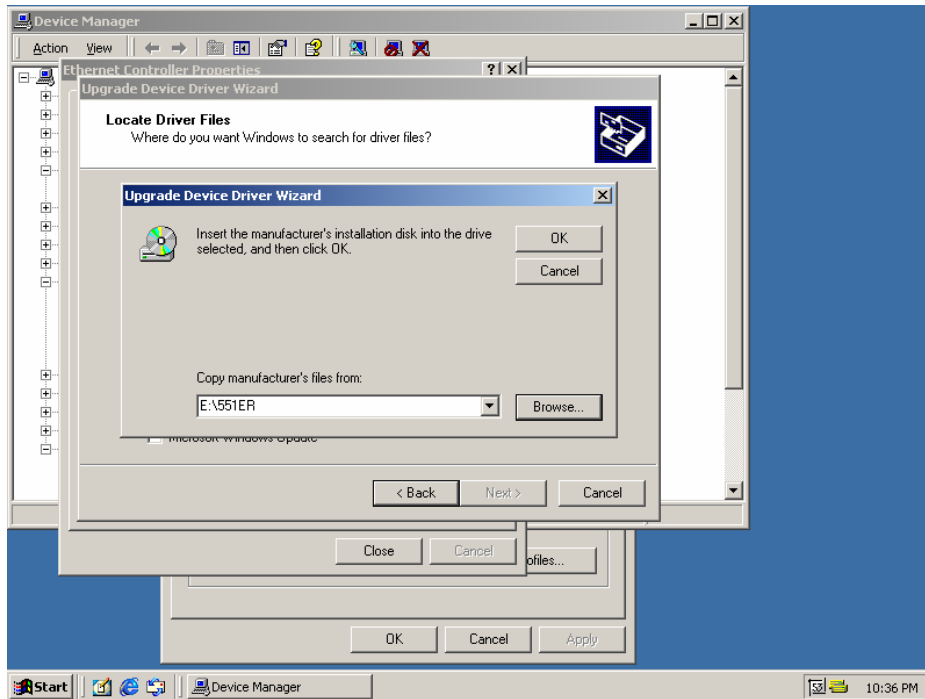
16. Click the [Next] button.
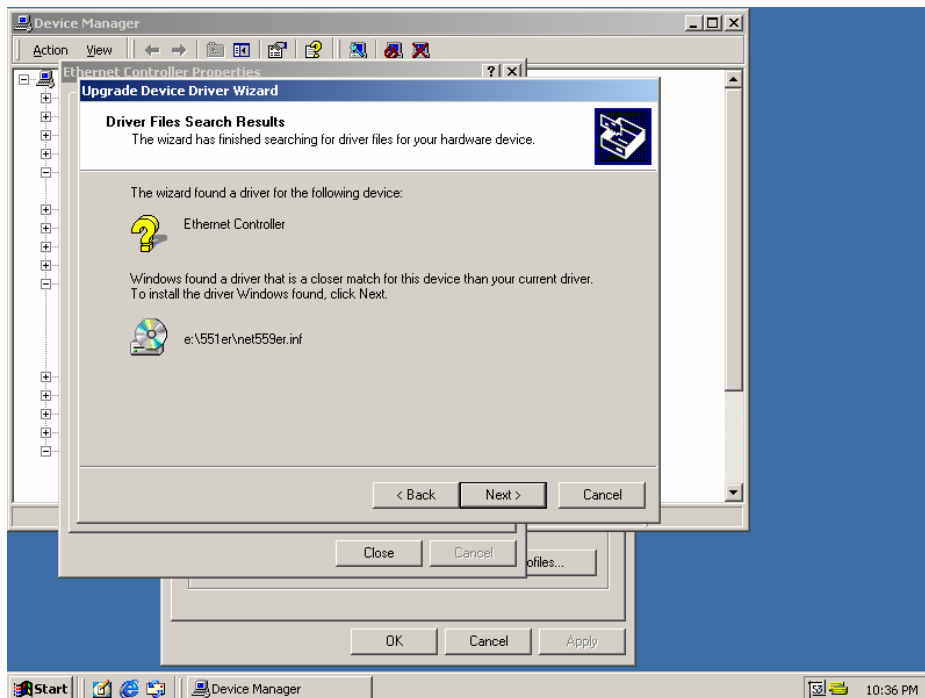
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17. Click [Yes] button.
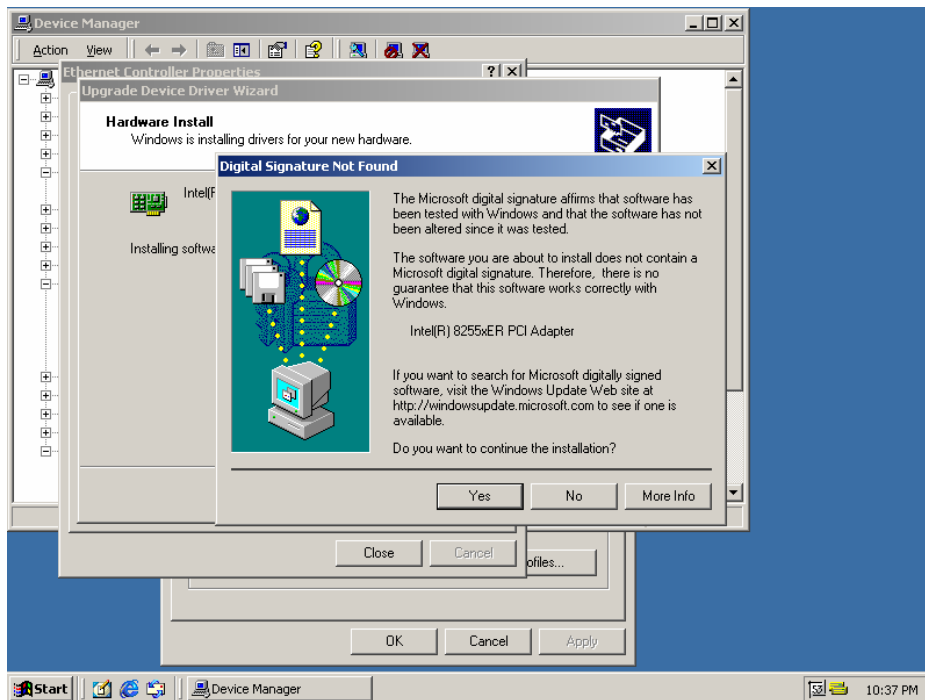
18. Click [Finish] button then complete the installation.
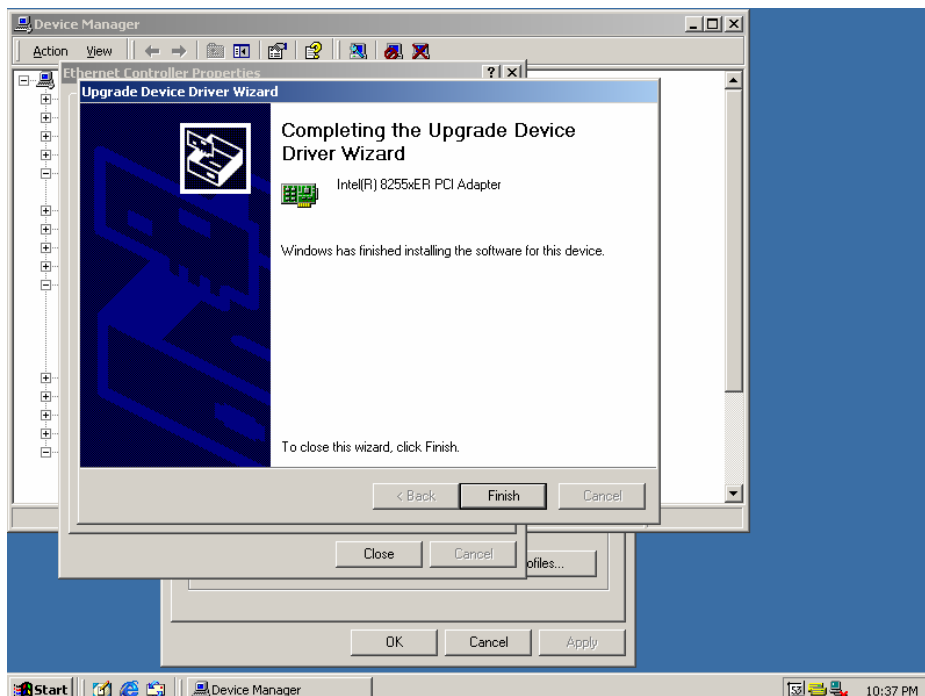
4.4 RAID Driver Installation

CB-6970 supports RAID function in some models.   Please check and install the driver follow the below procedures.

1. Insert the setup CD of CB-6970 into your CD-ROM drive.
2. Choose the Drivers file to click the Setup icon.
3. Click [Next] button.
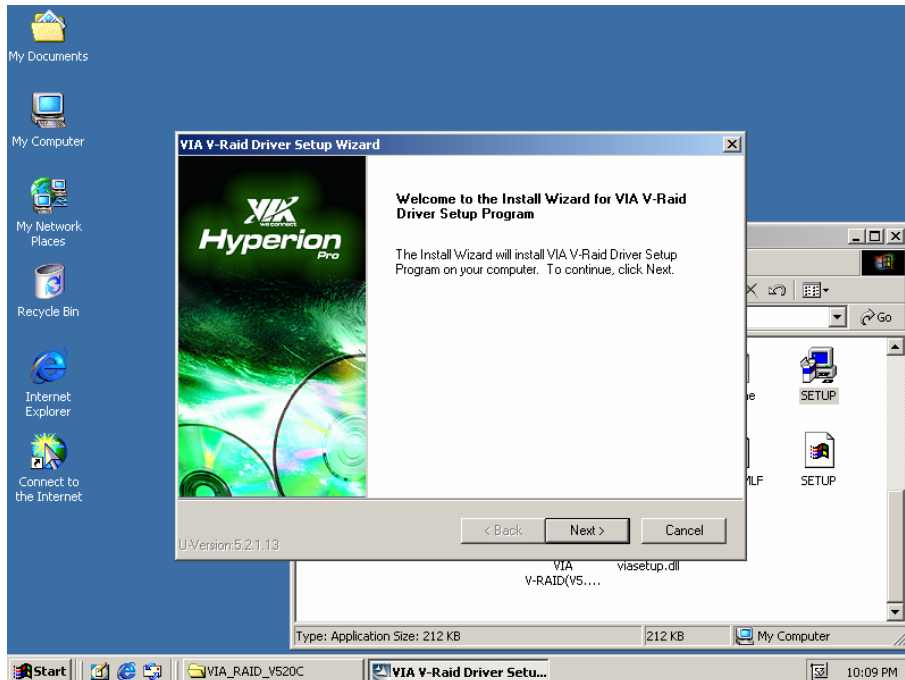
4. Select <I Agree>.   Click [Next] button.
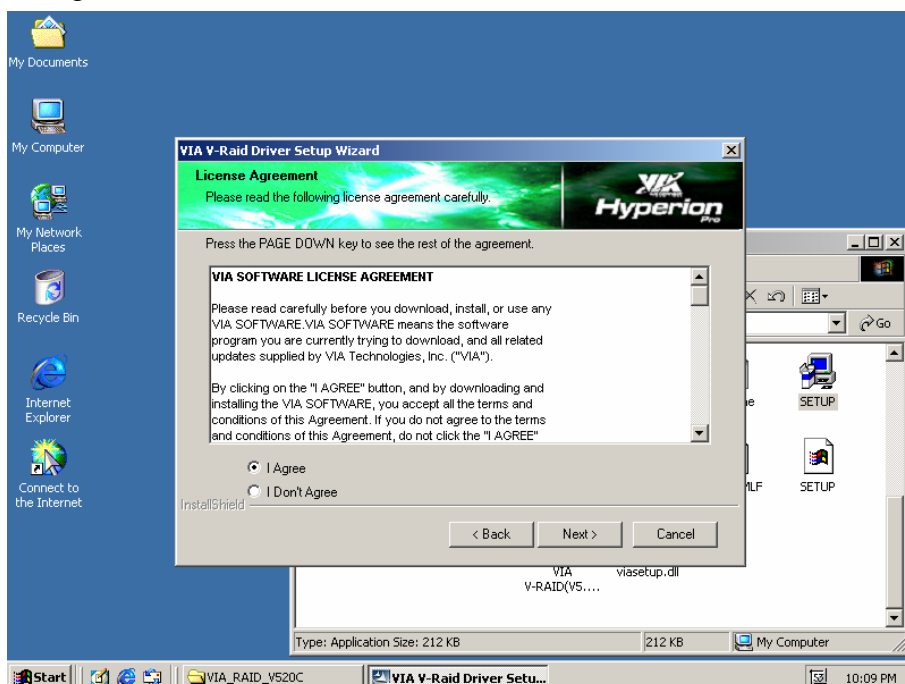
5. Choose the components you want to install, then click the [Next] button.
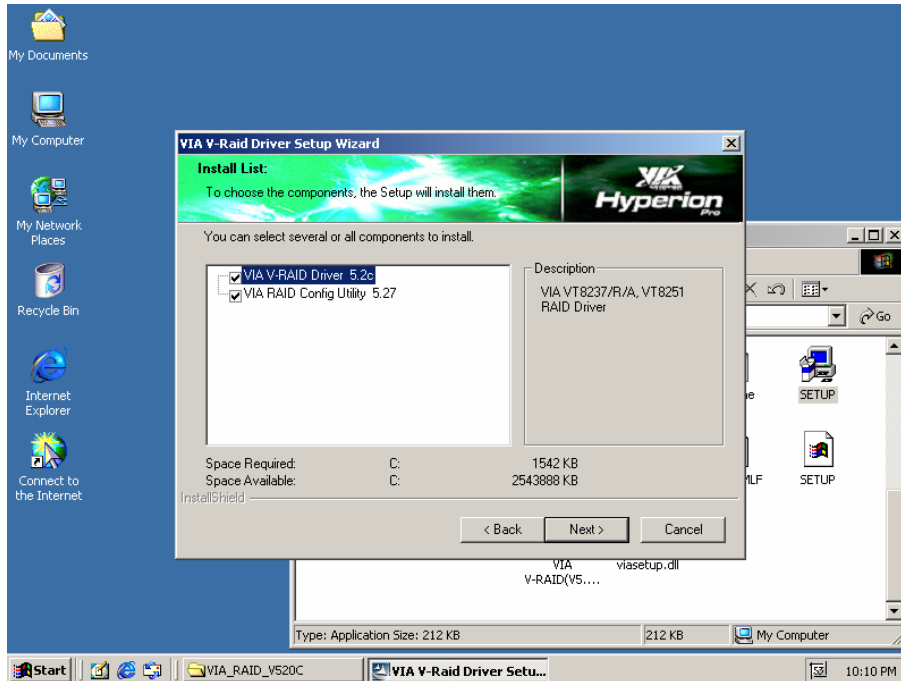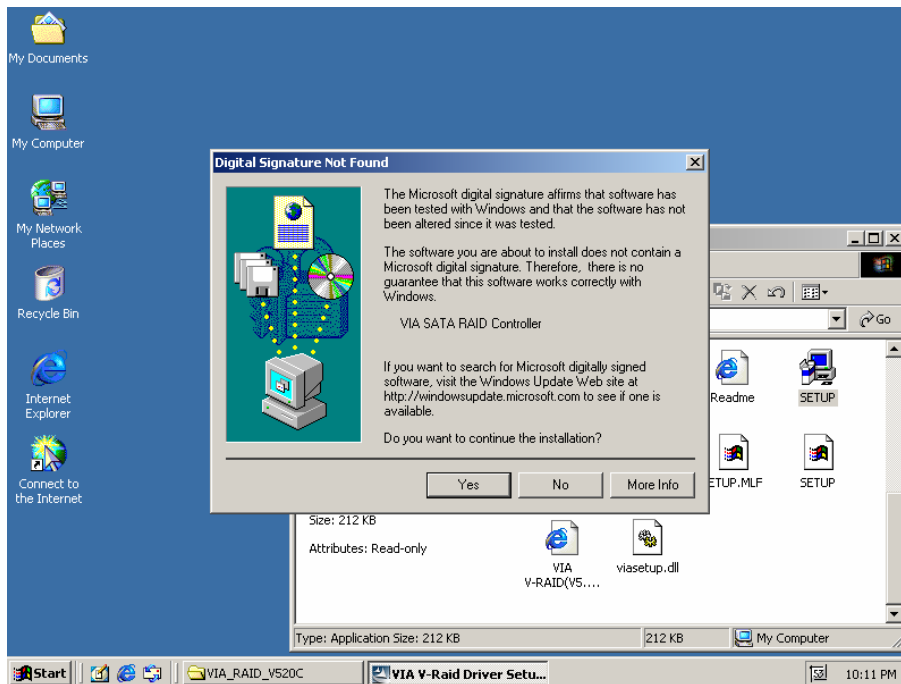

6. Click the [Next] button.
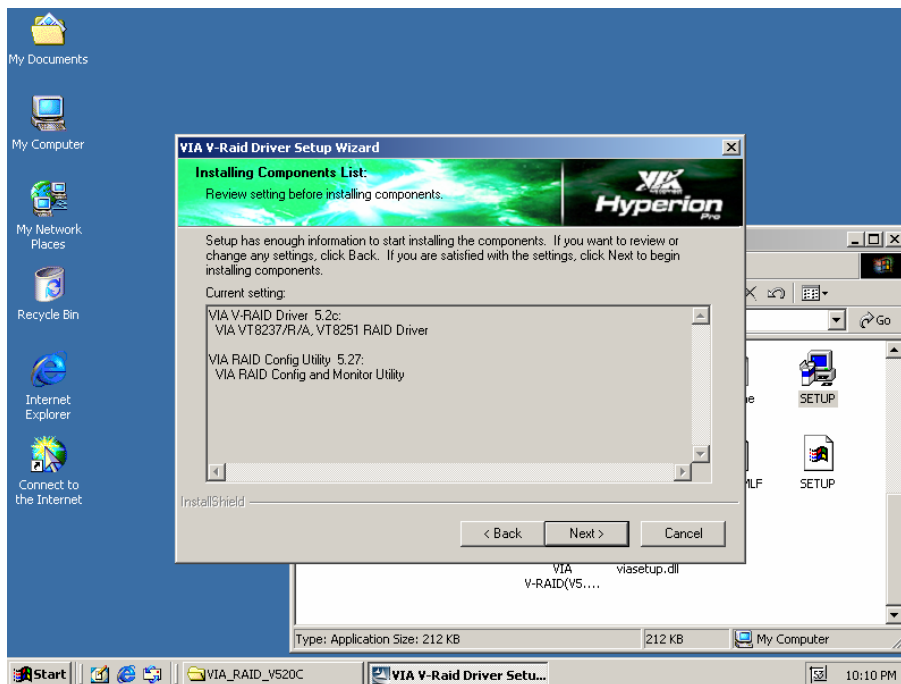
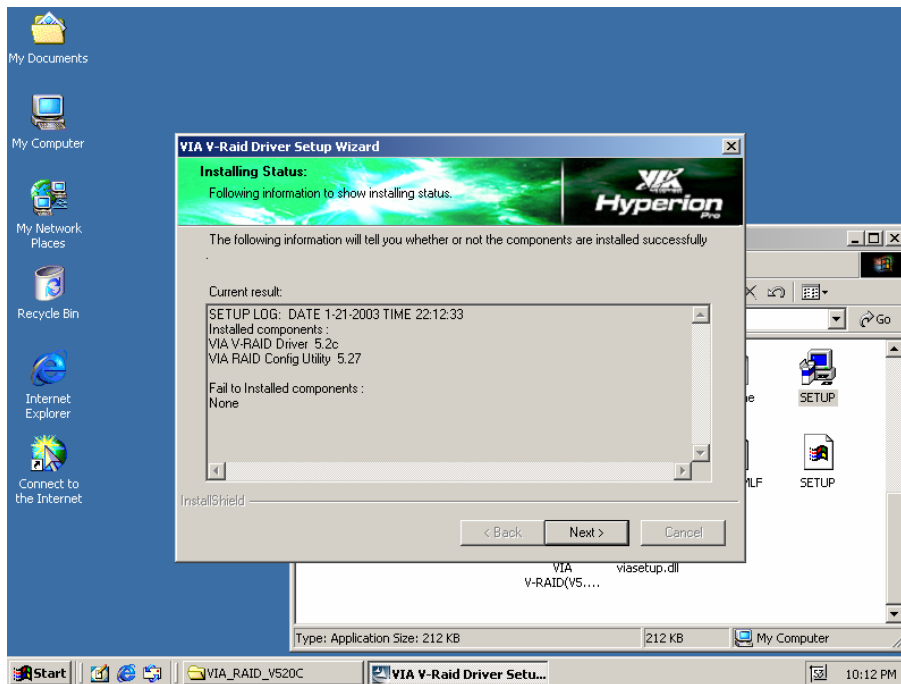# User's Manual

7. Click the [Yes] button.

8. Click the [Next] button

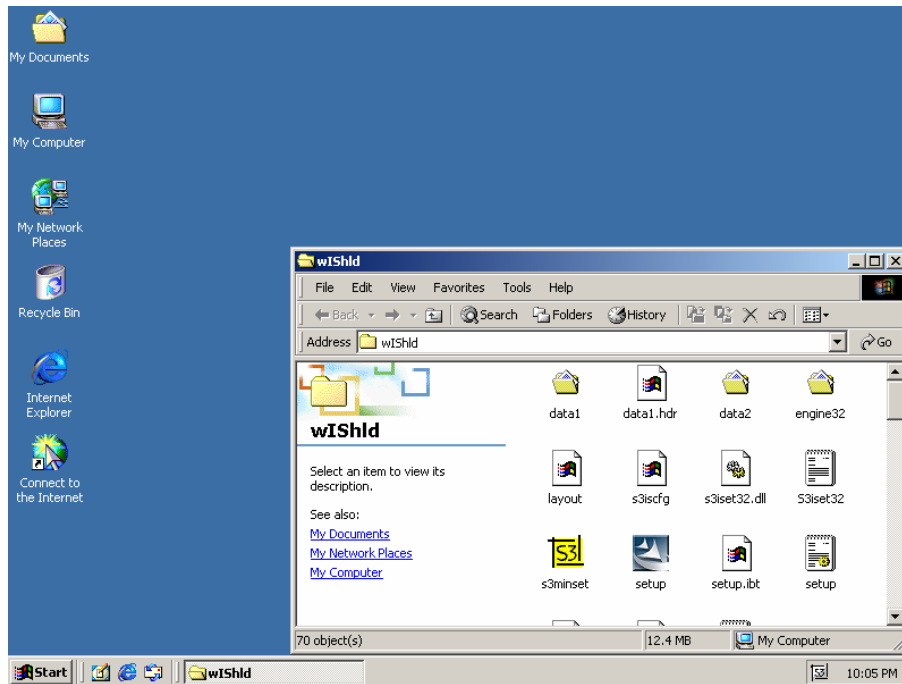9. Click the [Finish] button to complete the installation.
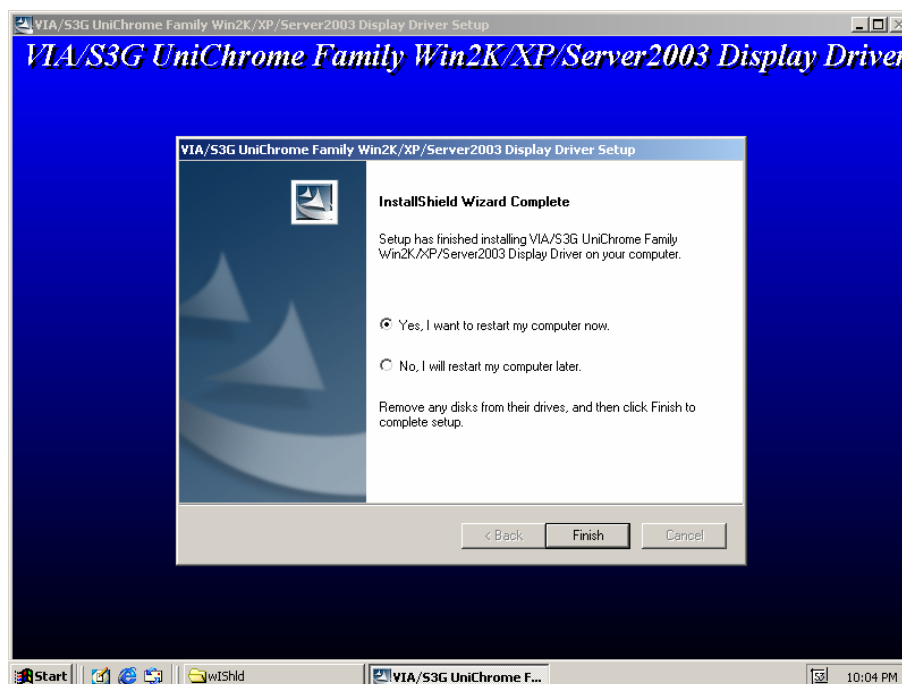
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4.5 VGA Driver Installation

CB-6970 supports VGA display controlled by VIA/S3G Unichrome chipset.   Please install the driver follow the below procedures.

1. Insert the setup CD of CB-6970 into your CD-ROM drive.
2. Choose the Drivers file to click the Setup icon.

3. Follow the onscreen instruction to finish the driver installation in sequence.

Appendix A: Programming the Watchdog Timer

The CB-6970 provides a watchdog timer that resets the CPU or generates an interrupt if processing comes to a stop. This function ensures greater system reliability in industrial stand-alone and unmanned environments.

In order to enable the watchdog timer, you have to output the value of the watchdog timer interval to the controller. The value range is from 01H to FFH, and the related time watchdog timer interval is 1 sec to 255 sec.

Data	Timer interval
00	Disabled
01	1 sec
02	2 sec
*	*
*	*
FF	255 sec

If you want to disable the watchdog timer, just set the timer interval value to 00H.

After setting the timer interval value, the watchdog timer begins to count down. You have to refresh the watchdog timer, so that the watchdog timer will return to its initial value; otherwise, your system will reset after a time-out. The following program shows how to set the watchdog timer:

ASSEMBLY LANGUAGE	DOS DEBUG
Program 1: Initializing the watchdog controller	
MOV DX,2EH	O 2E 87
MOV AL,87H	O 2E 87
OUT DX,AL	
OUT DX,AL	
MOV AL,07H	O 2E 07
OUT DX,AL	O 2F 08
MOV DX,2FH	
MOV AL,08H	
OUT DX,AL	
Program 2: Writing a watchdog timer interval value	
MOV DX,2EH	O 2E F6
MOV AL,F6H	O 2F XX
OUT DX,AL	O 2E AA

```
MOV DX,2FH
MOV AL,XXH        ; Timer interval *** see note ***
OUT DX,AL
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

Note: This XX value range is from 01H to FFH, and the related watchdog timer interval is 1 sec. to 255 sec. (as in the previous description).

Using the Demo Program

Update the System BIOS as follows:

1. Run Program 1
2. Run Program 2 (load the timer interval of 1EH, 30 seconds)
3. Run your Application Program #1 (**Be sure your Application Program will finish within 30 seconds**)
4. Run Program 1
5. Run Program 2 (change the timer interval value to 3CH, 60 seconds)
6. Run your Application Program#2 (**Be sure your Application Program will be finished within 60 seconds**)
7. Run Program 1
8. Run Program 2 (reload the timer interval value of 3CH, 60 seconds)
9. Run Program 1

Run Program 3 (**Load the timer interval of 00H, and disable the watchdog timer function**)

Appendix B: Optional LAN Module

The CB-6970 can support additional two LAN ports via an optional Mini PCI LAN module. With the LAN module equipped, CB-6970 can support six 10/100Mbps LAN in total.

Part No.	Description
R-050A	Mini PCI module with two 10/100Mbps interface
R-051A	Module with two RJ45 connectors

Appendix C: Optional Cable List

The CB-6970 is equipped with some cables for testing, verification, etc.

Part No.	Item	Connector	Description
46-ATA660-00	IDE Cable	IDE 1	2.54mm, 46cm, ATA-66/100
46-I001X4-00	IDE Power Cable	CN15	2.54mm, 3cm, 4 pin power cable
46-IUSB01-00	USB Cable	CN11	25cm
46-ICOM04-00	COM Port Cable	CN10	22cm, D-Sub 9, 2*5
46-IPS200-00	KB/MS Cable	CN13	15cm
46-IVGA01-00	VGA Cable	CN12	2.00mm, D-Sub VGA Cable